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The Mining Journal

LONDON, JULY 1, 1960

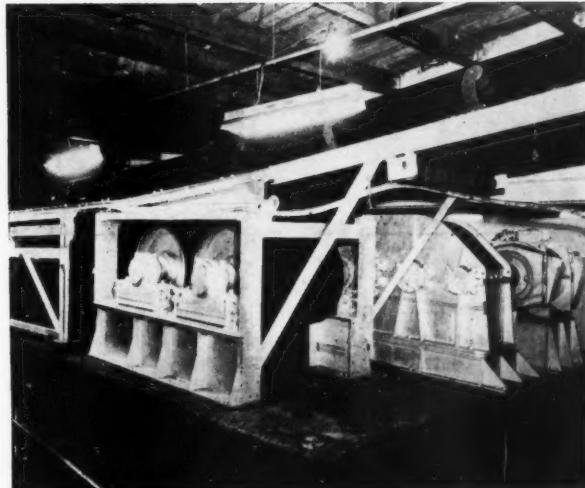
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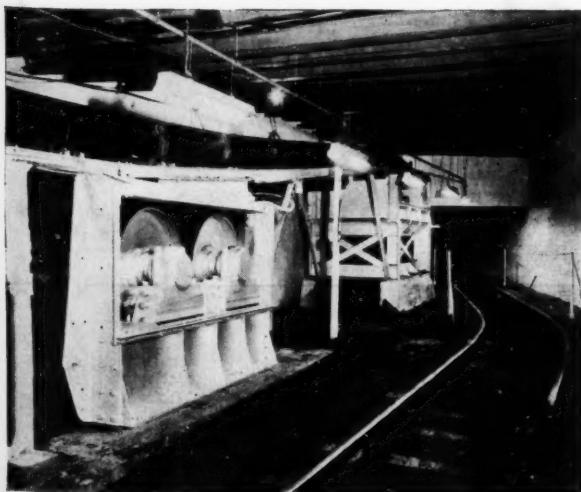
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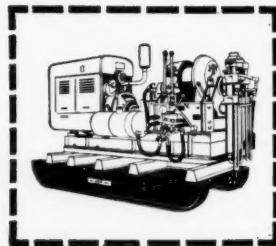
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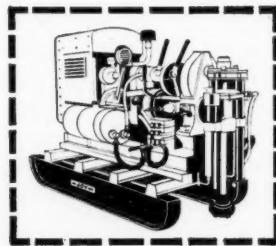


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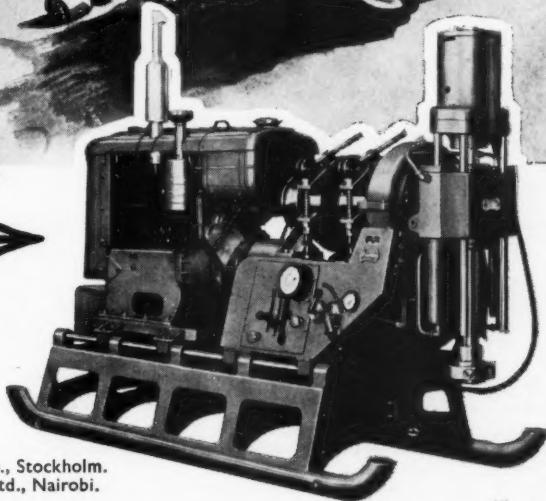


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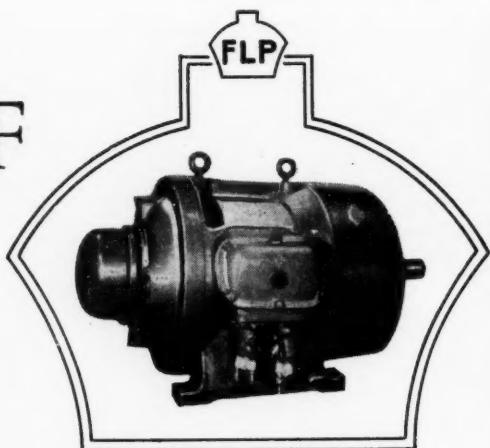
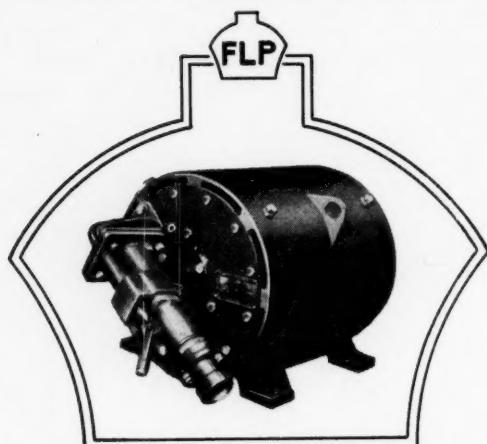
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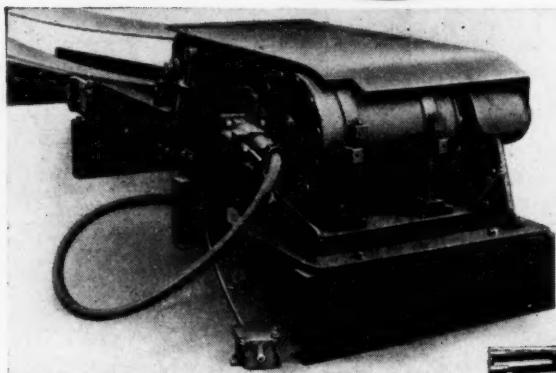
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Top Left: *Totally-enclosed fan-cooled flameproof squirrel-cage motor, type KF.*
Top Right: *T.E.F.C. flameproof slipring motor, type FW.*

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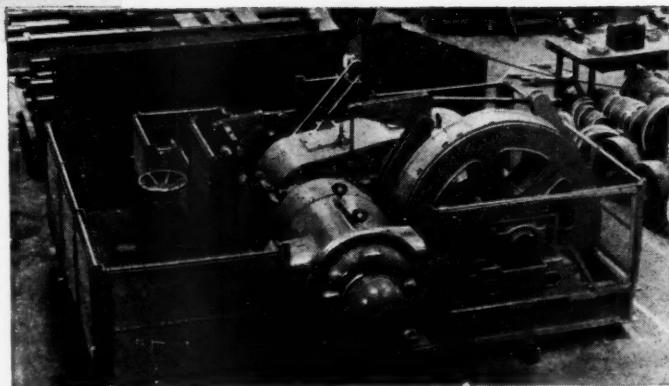
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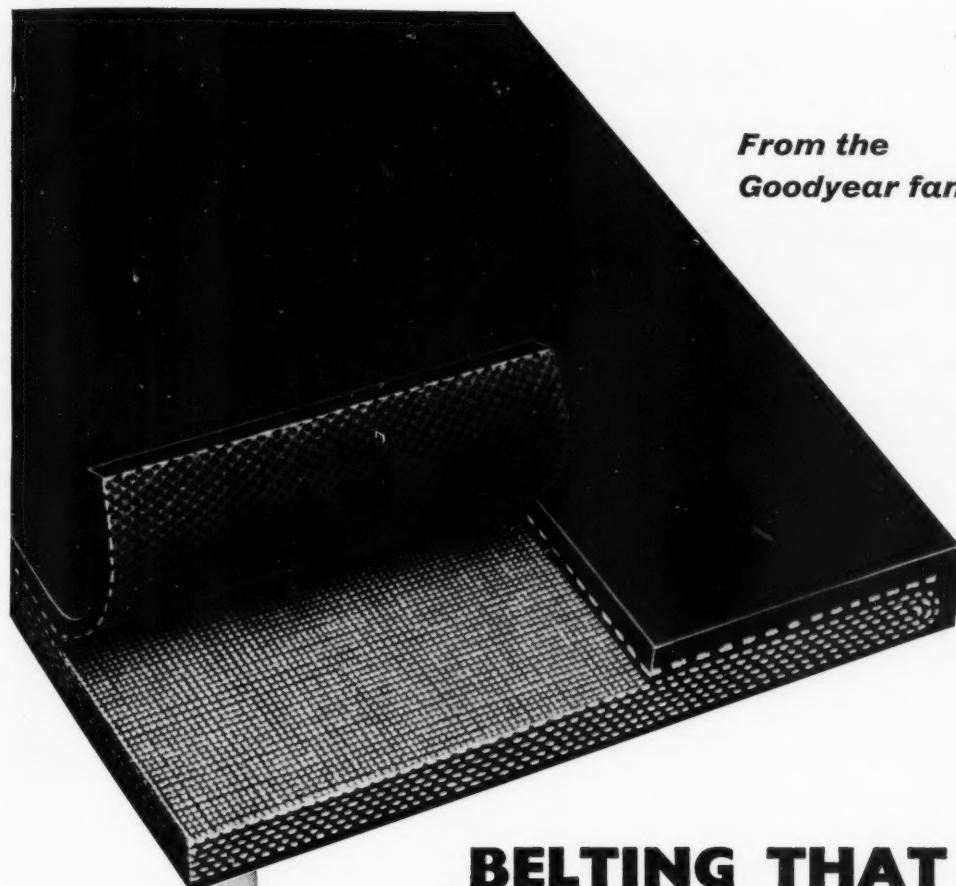


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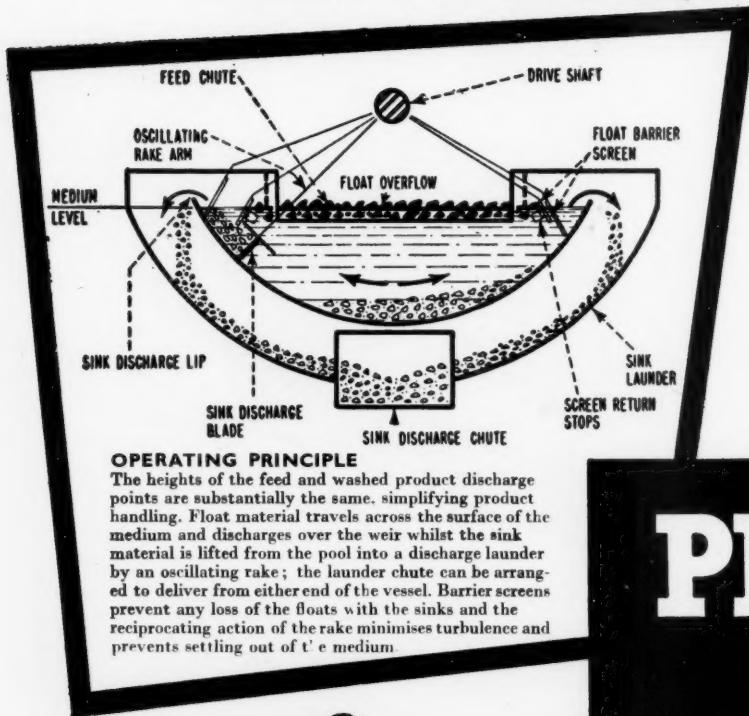
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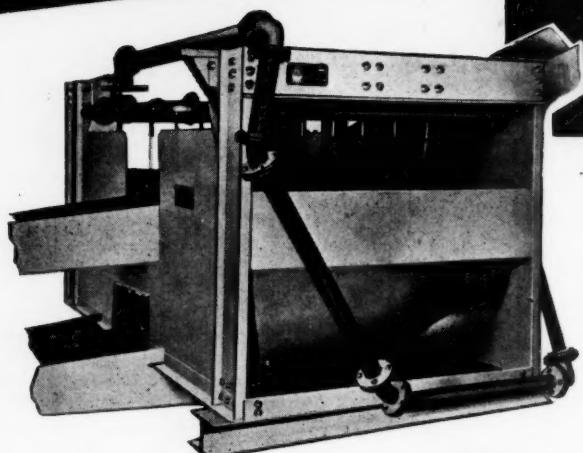
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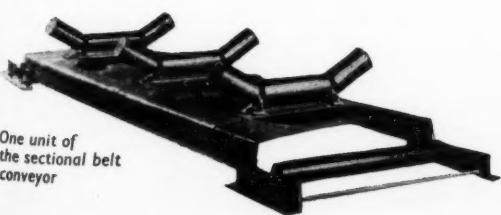
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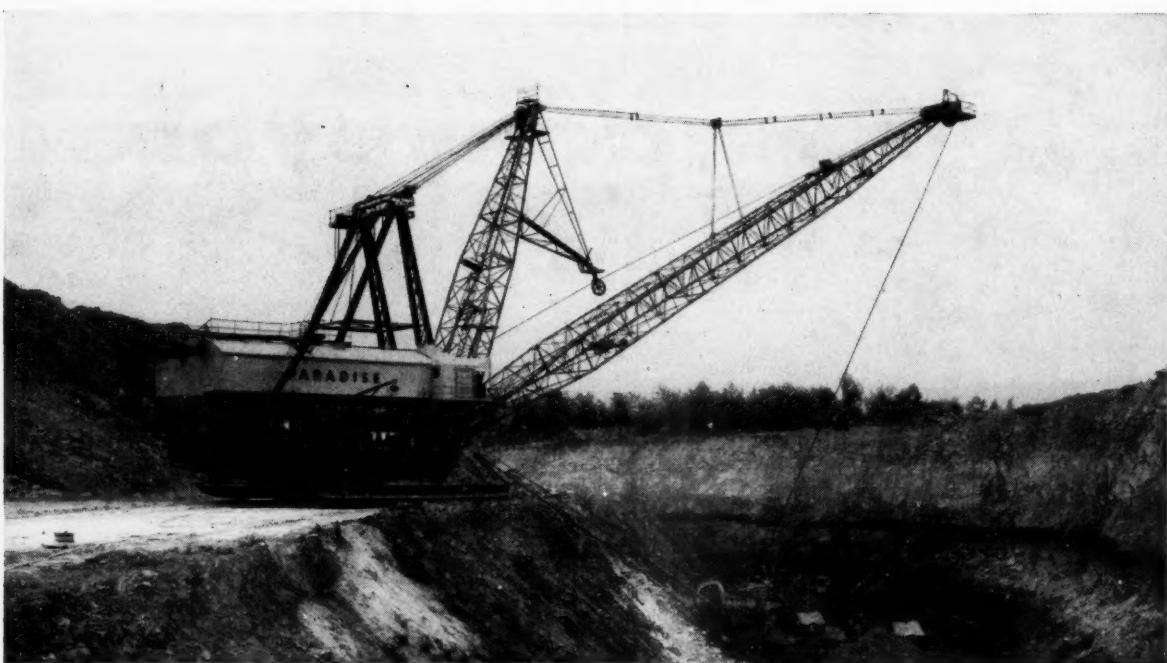


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The Mining Journal

London, July 1, 1960

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South African Mining Speaks Out

THE presidential address at the annual general meeting of the Transvaal and Orange Free State Chamber of Mines provides the principal annual occasion for a public statement by the gold industry of its views upon matters of current concern both to it and — since gold is still the principal prop of the South African economy — to the Union itself.

This year's annual meeting which took place last Monday under the presidency of Dr. W. J. Busschau (his presidential address is reported on page 22) is, of course, of especial significance in the context of the Union's racial problems, which have, as a result of the disturbances in several urban areas in March and the subsequent declaration of a state of emergency, become the central issue in South African politics.

It is as well that we should be clear that events of recent months reflect no fundamentally new factors in the South African situation, and certainly we regard the risks of social unrest in the Union as no greater today than six months ago. What has happened in the interval has been that the elements in the situation have been brought much more forcibly to people's minds than ever before both inside and outside the Union. It is not the situation which has been changing in recent months, it is people's attitude to it.

It is for this reason that although the problems concerned are basically racial and political in character, yet their immediate consequences are being felt, and felt keenly, in the economic field. For a country which depends to an exceptional degree both on its exports and on its good name in the world's capital markets, the present lack of world confidence in South Africa's racial policies is bound to be a source of weakness in the Union's economy just at the moment when it has become obvious that *something* is going to have to be done about the economic and social advancement of the African and that *whatever* is done is going to need a great deal of capital and is consequently going to be dependent on a strong economy. (Bantustans interpreted in the spirit of the Tomlinson report and carried to a logical conclusion would certainly cost no less and in the long run would probably cost considerably more than a programme of African settlement and advancement within an urban multi-racial framework.)

Today the Union's economy, despite its steady growth and diversification, is still primarily dependent on gold. Last year, as Dr. Busschau points out, South Africa's exports totalled £632,000,000 of which the gold mining industry accounted for £292,000,000 (inclusive of uranium oxide) while other mining exports added a further £73,000,000. Although gold output and profits continue to rise steadily year by year and have been unaffected by the recent disturbances (the African miners having continued to work normally throughout recent months), the hard fact nevertheless remains that Kaffir share values are today generally about 25 per cent to 30 per cent down on the prices at which they stood at the beginning of this

year. Admittedly events in other parts of Africa have contributed to this decline, but there again they would probably not have done so had the situation in the Union been different.

In these circumstances the Chamber has every right to express concern at the state of affairs which has brought about this collapse in market values, a collapse which owes nothing to the intrinsic condition of the industry. As the principal prop of the Union's economy the gold industry would be doing less than its duty if its leaders did not point publicly to the economic consequences of present government policies. Certainly it is more than a little hard that in doing so they should be accused in government-inspired statements, as they repeatedly have been, of placing sectional interests above the national welfare. In recent weeks leaders of the industry such as Mr. Harry Oppenheimer, Mr. Charles Engelhard, Sir Charles Hambro and now, still more recently, Sir George Albu (see page 27) and Mr. S. G. Menell have all, in addressing their own shareholders, warned the government quite unequivocally as to where present racial policies are leading the country in terms of lost industrial output, lost export markets and lost confidence among overseas investors. Nor have the leaders of the mining industry been alone in their protests, for it will be recalled that in May Dr. Busschau, as president of the Chamber of Mines, lead a deputation to the government, representative of all industrial and commercial interests in the country, which expressed precisely these views and put forward practical and constructive suggestions for dealing with the urban African problem.

How are we to interpret the government's apparent refusal to heed such responsible advice and indeed its inclination to question the motives behind it? The leaders of the government are mostly men of high intelligence and high purpose, who are certainly fully aware of the economic facts of life. Because, however, they have continued to display an ostrich-like posture in public, it would as yet be premature to deduce that the processes of collective cerebration in private have been arrested. Indeed it is probable that one of the reasons why nothing has yet been done is because the debate as to what should be done still continues.

Progress on this front has doubtless been delayed by the Prime Minister's most deplorable injury and to uncertainty as to how quickly and how completely he will prove able to resume his duties. Beyond this it has been apparent that the views of the Transvaal Nationalist Party and of the Cape Nationalists are somewhat at variance and these differences have clearly to be reconciled before the government can change its political course firmly and convincingly. Moreover there must be a strong government disinclination to take precipitate action, which might appear to suggest that civil disturbance is the shortest route to African advancement.

Beyond this again is the problem of the referendum on the Republican issue. Many people in South Africa regard this not merely as a vote on the Republican issue but also as in the nature of a general vote of confidence in Dr. Verwoerd. Thus the government may well feel disinclined to risk alienating votes by liberalizing its racial policies before the referendum is out of the way. However dismal may be the immediate economic outlook for the Union, it is clear that it is early days yet to assume that the government's present intransigence should be taken at its face value. It will be time enough to place the worst interpretation on its intentions if nothing has developed by the end of the year. Meanwhile, so long as there is reason still to look for a sensible eventual reaction by the government to the Union's troubles, the objective comments we have been getting from the leaders of the South African business community, coupled with the present level of South African share values, are probably the most effective reminders the government can have of the urgency of the situation.

While the government may still be presumed to be reckoning up the economic cost of its racial policies, the continued

insistence by investors on placing South Africa's new mines on a 10 per cent eventual yield basis is a far more telling expression of overseas opinion than could be any privately organized boycott or similar emotional protest, which must tend only to confuse the hard economic facts of the situation and build up a psychological resistance to change of any sort.

GROTHE REPORT PUBLISHED

The so-called Grothe Report on the technical and economic possibilities of the setting-up of a lead and zinc refining industry in Peru has now been published in two parts. The first of these, on the refining angle of the question, is the work of the German experts Herr W. Hermann and Dr. L. Nöth and the second, on the mining angle, by the German Professor H. Grothe, after whom the report is named.

The report, taken as a whole, states that the processing of Peruvian lead and zinc concentrates is both technically and economically possible in the Lima area of Peru. The site for a proposed plant is on Ancon Bay near the country's capital. The basis for the refineries' operation would be ore reserves in central Peru which would be able to produce sufficient quantities over a long term — at least twenty years. Existing processing plants would be able to produce concentrates in great enough volume and of good enough quality to feed the refinery.

The building of a lead refinery alone is rejected by the report as being uneconomic. Foreseen are two possibilities — either a zinc refinery with a daily production capacity of 100 tonnes combined with a lead refinery with a 150-tonnes-a-day capacity or a lead-zinc refinery working to the Imperial Smelting process with a production of 90 tonnes of zinc and the same amount of lead daily. The first of these plants would need capital expansion of some \$U.S.34,000,000 and the second would cost about \$U.S.24,000,000. Expansion should be left until such time as skilled staff have been trained and experience gained of operation.

The Grothe report also recommends the using of by-product sulphuric acid at the refinery for production of synthetic fertilisers.

INTEREST IN FIJI'S MINERALS

There appear to be several opportunities to develop local rock and mineral resources, states the annual report of the Geological Survey Department of Fiji for 1959. The successful proving of raw material for cement manufacture near Suva by the Geological Survey is now an accomplished fact. Other possibilities are bauxite mining, utilization of pumice powder, materials for paint pigments, and the production of salt by concentrating solar heat to evaporate sea water. Through recent research the fertilizer value of some of the impure phosphate deposits has once again been revived.

Considerable interest was displayed in bauxite both by prospectors and by Aluminium Laboratories Ltd. of Montreal. At the end of the year this company retained prospecting licences over Tuvuca Island and in parts of Western Vanua Levu. Three main types of aluminous material have so far been recognized in Fiji; these are gibbsite fragments, brown, earthy exfoliated aluminous material, and earthy phosphatic bauxite. The latter is also of possible interest for its phosphate content. An Aluminium Laboratories geologist worked in the Wainunu area, S.W. Vanua Levu, during parts of October and November, where he carried out a pitting programme.

Further tests by the Mineral Resources Division on four phosphatic samples from Fiji indicated that the available P_2O_5 might compare favourably with that of phosphate deposits in other parts of the world. If so, it is possible that

despite high iron-aluminium, these phosphates may have some fertilizer value.

A sample of the Malau volcanics was sent to an Australian firm so that its suitability as pumice when milled and classified could be assessed. Recently a Suva firm expressed interest in local pumiceous rock and requested 4 cwt. of the ground material for trial purposes. There seems some possibility of establishing a small local industry to supply pumice products if tests prove satisfactory.

Samples of barytes were received from several new localities. No extensive deposits have been proved, but it is considered that some prospects are worth further attention, especially if a potential market for this mineral exists.

SHOULD AUSTRALIA EXPORT IRON ORE?

The case for the export of iron ore from Australia is being pressed. The Minister for National Development has said that there are large deposits of iron ore in the Commonwealth, discovered in a recent survey by the Bureau of Mineral Resources. The survey was the first made on iron ore for 20 years. Quality of the ore in many of the deposits is not known, because the leases covering the occurrences have not been opened up. Deposits now being worked have been found to be more extensive than had been supposed. This is particularly the case with the Yampi Sound deposits and those in South Australia.

A proposal has been made for a package deal to link exports of iron ore and coal, reports our Australian Correspondent, for it is considered by some that the Commonwealth policy of prohibiting export of iron ore is over-conservative. There is increasing demand for Australian coal and the proposal is to sell coal and iron ore at the same time. Such a policy, it is claimed, would treble mineral exports by 1975; moreover, limited exports of these minerals would increase the country's earnings and encourage the search for high grade ore.

WEST GERMAN AID TO UNDERDEVELOPED COUNTRIES

The Federal Finance Ministry has released figures showing the volume of West German financial aid to under-developed countries during 1959 reported the *Export Service Bulletin Weekly Supplement*. The figure given for total expenditure on aid was DM 3,450,000,000 (compared with DM 2,334,000,000 in 1958), but this figure included private export credits and direct investment to a value of about DM 1,500,000,000. Total Government bilateral aid amounted to DM 685,000,000, including DM 90,000,000 in the form of technical assistance grants. Multilateral aid totalled DM 1,178,000,000. Of this DM 125,000,000 consisted of government contributions to multilateral technical assistance programmes, and the remainder was accounted for by contributions to the World Bank and International Monetary Fund, a loan to the World Bank floated on the German capital market, and other private forms of financial contributions.

In a report to the Economics Ministry, a Committee of Expert Advisers recommended that in future German aid to under-developed countries should be channeled as far as possible through international organizations, and that where bilateral aid was unavoidable, it should be coordinated as far as possible with other aid-giving countries and organizations.

HOUSE ORGANS IN SOUTHERN AFRICA

The news that in its first year of publication the R.S.T. journal *Horizon* has gained four awards in competitions, sponsored in the United States and Britain, for industrial magazines, is a well deserved tribute to one of the most successful house journals in the mining industry. Three of the awards were won in an international competition, in which there were 800 entries, and one in a British competition, in which there were nearly 400 entries.

Perhaps the most striking aspect of this achievement is that, although *Horizon* was launched by R.S.T.'s public relations department to serve purely as a vehicle of internal communication, it has had the courage to be a serious publication in which the industrial and political problems confronting the industry and its employees are discussed from the widest standpoint and in an exceptionally adult manner. In fact, the special citation gained in the international competition made particular reference to an excellent series of articles on changing conditions in Africa. The journal is produced and edited at the Group's headquarters at Salisbury. Except for its colour blocks it is produced entirely in the Central African Federation.

There must be something in the air of Southern Africa which is conducive to the production of house organs of the highest class, since *Optima*, the quarterly review published by Anglo American in the interests of external public relations, is also an outstanding publication which does a rather different job no less supremely well. There could be no more striking example of its constructive and forward-looking approach to the field of external relations than the four special supplements which it is publishing in connection with South Africa's fiftieth anniversary celebrations. The aim of these supplements which, it might be added, were planned well before Sharpeville, is to clear the ground for a new and realistic approach to the country's future.

In the first supplement, which has already appeared, a distinguished lawyer discusses constitution making for a multi-racial country and deals with the complicated and important problem of reconciling democracy with protection of the fundamental rights of all sections of the population.

Other supplements will discuss the social relations between White and non-White in South Africa; the position and prospects of African workers in industry and their relations with European workers; and the role of South Africa seen against the emergent, highly nationalistic independent Black states to the north.

As Mr. H. F. Oppenheimer puts it, if these special supplements provoke thought about the questions on which the future prosperity, happiness and security of South Africa depend, *Optima* will have made a worthwhile contribution to celebrating the foundation of the Union fifty years ago.

It is hardly surprising that in Southern Africa, with its unique and imperfectly understood problems, there should be a growing emphasis on the wider aspects of public relations, which finds expression in the publication of informative, thoughtful and attractively presented journals. This trend is by no means confined to the mining groups, for it is noteworthy that last year the Chamber of Mines, Southern Rhodesia, created the *Chamber of Mines Journal* in order that the activities and problems of the country's mining industry might be presented to the public in a readable and interesting form.

The first issue appeared in May, 1959, and there can be no doubt that this excellent journal is performing a most useful and necessary service in making the views of the Chamber and of the mining industry known to a wide and representative public, both locally and overseas.



Developing Northern Canada's mineral resources. Site of exploration shaft during the development of Inco's Moak Lake project

Northern Canada—I

Economic Factors in Mineral Development in Northern Canada

To what extent and in what way additional costs attributable to location, compared with more southerly parts of Canada, affect mineral development in Northern Canada has recently been discussed by Amil Dubnie in a report, published in December 1959, by the Mineral Resources Division, Department of Mines and Technical Surveys, Ottawa, entitled "Some Economic Factors Affecting Northern Mineral Development in Canada"

WIIDE differences in cost increments exist between various mining operations, depending on geographical factors, size of operation, type of extraction process required, availability of labour and company policy concerning labour and inventories. These additional costs are usually quoted with reference to some base of supply, such as Edmonton, Churchill or Whitehorse, though Edmonton, for instance, is still 2,000 miles from the main markets.

Included in such additional increments due to location are the major costs of transportation, power and services to employees which total about \$3.00 per ton of mined material. In addition, the heating increment is in the order of \$0.25 per ton mined and the interest increment on the value of stores and supplies varies from \$0.25 to \$1.00 per ton mined. Less likely to be generally applicable is the interest increment on capital investment which is about \$1.00 per ton mined. Not evaluated on a general basis are increments on higher labour turnover, the tie-up of capital in concentrate stocks and the shipping of concentrates, though the latter could be one of the largest single increments in base metal mining. Because of the close inter-relationship involved, an improvement in one factor included in total additional costs, such as transportation or power supply, could affect other cost increments.

Dealing with conditions prevailing in 1958-59, the report treats as the Canadian North all Canadian territory north of latitude 55 deg. N., including parts of seven provinces each with its own mineral legislation and about 1,500,000 square miles of territory under federal jurisdiction, most of the land north of latitude 60 deg. N. being in the latter category.

Six underground mines and two major dredging operations account for practically all metallic mineral production in the Yukon Territory and Northwest Territories and only the Norman Wells field produces petroleum and natural gas commercially. The annual mineral production from all sources in the Territories amounts to about \$40,000,000, approximately 2 per cent of the Canadian total.

In the provinces north of latitude 55 deg. N., the Lake Athabasca uranium mines in Saskatchewan, the Lynn Lake nickel mine in Manitoba and the McDame Mountain asbestos mine in British Columbia are in production, while petroleum and natural gas are being produced in the Peace River area of British Columbia and Alberta. In all, mineral production north of latitude 55 deg. N. amounted to about \$133,000,000 in 1959, or approximately 6 per cent of the Canadian total.

For purposes of the report, the Canadian North has been divided into three main access divisions : the Eastern and Arctic, the Central and the Western areas.

The eastern sub-Arctic includes those portions of Quebec, Labrador, Ontario, Manitoba, Saskatchewan and the Northwest Territories north of latitude 55 deg. N. and south of the tree-growth line, most of which is within the Canadian Shield. The underlying and exposed rocks are considered favourable for the economic concentration of minerals. Numerous lakes and rivers offer local transportation and possibly power sites. Most of the area is muskeg-covered and substantial depths of permafrost occur in the north. Forest cover, predominantly black spruce, is dense in the south and the agricultural land available is limited. The 3,500-ton-per-day Sherritt Gordon nickel-copper mine at Lynn Lake is the only operating mine, but a large nickel deposit is being developed at Thompson. These are also the two largest centres of white population. Exploration is continuing on the Quebec-Labrador iron occurrences which constitute important resources.

Most of the Canadian Arctic is considered favourable for mineral exploration — for metallics in the Shield areas and coal and oil in the Arctic coastal plain area. Development north of the mainland does not appear imminent. Nickel-copper orebodies are being mined at Rankin Inlet and one gold prospect, the Tauranis operation, N.W. of Yellowknife, is being developed. Exploration is being conducted in favourable areas and nickel-copper occurrences in the Cape Smith-Wakeham Bay belt in Ungava and the ferrous and non-ferrous mineral occurrences in Quebec-Labrador may be developed eventually. The Rankin Inlet operation is fortunate in not requiring large quantities of imported materials and costs are not, therefore, much affected in this respect.

Included in the Central Access Division is that portion of the Interior Plains occupying part of Saskatchewan, practically all of Northern Alberta and the Mackenzie Lowlands. All the producing mines of the Western Shield are in this division and the largest mining centres of the area are Uranium City, Sask., and vicinity, where several mines produce a total of about 4,800 tons of ore daily, and Yellowknife, Northwest Territories, where three gold mines win 1,700 tons of ore daily, Peace River, Alberta and Fort St. John and Dawson Creek, B.C. are oil and agricultural centres. Important resources for future development are the Athabasca bituminous sands, the Pine Point zinc-lead deposit and oil and gas reserves.

The Western Access Division includes all of the Cordilleran region within the Yukon Territory and Northern B.C. and the treeless portion of the Yukon Territory along the Arctic Coast. Present mining operations centre on the silver-lead-zinc deposits at Elsa, Yukon Territory, placer gold deposits of the Yukon River and its tributaries and the asbestos deposits of McDame Mountain, B.C. Exploration is being pursued in the Findlay River Area of B.C. Oil and gas companies are



active and deposits of asbestos are being examined, while silver-lead-zinc and copper occurrences may be future producers.

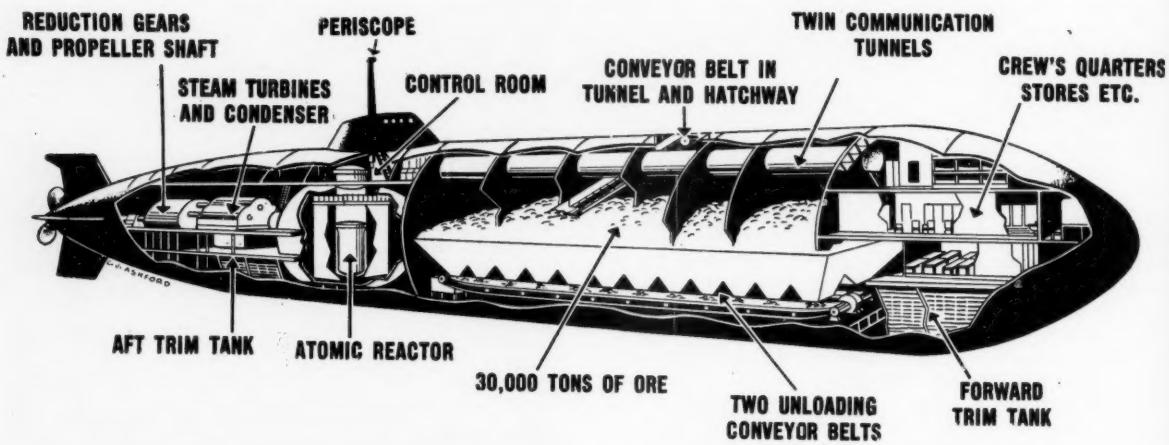
Transportation costs, the greatest single deterrent to the development of the northern mineral resources, affect most stages of development and most facets of production. Most existing northern producers are able to use water transport for much of their total delivery requirements.

Terrain presents its own problems, muskeg adds greatly to the cost of sub-grade construction and road building costs are high, though borne when economically justified. Since private access road building at up to \$10,000 per mile is seldom justifiable, efforts have been made, with some success, to develop vehicles that would traverse muskeg in summer. Permafrost is an aid to road construction and cross-country transportation, but hinders the gathering of aggregates and fill material and impedes surface drainage. Otherwise, it is not a serious obstacle to underground mining.

Aircraft have proved themselves highly important for development and maintenance purposes in the Canadian North. During 1958, about 8,000 tons of air freight moved north from Edmonton. The largest single item of the 6,000-ton southbound freight into Edmonton was uranium precipitate. Air transport is normal for personnel and where time is a factor.



Above, at right, a combined camp for drilling and surveying parties in northern Manitoba. Helicopter in background is used for supplies. Alongside, at right, loading nickel-copper ore at Rankin Inlet on the west coast of Hudson Bay. Transport costs can be reduced by bulk shipments and guaranteed minimum loads. North Rankin Nickel Mines has a once-a-year delivery from Montreal and, by guaranteeing a minimum of 900 tons, a rate of \$41.50 per ton has been possible. By shipping in bulk by chartered boat, the company has reduced the rate for shipment of concentrates to Churchill to 2.5 cents per ton-mile, including handling at both ends, and the rail rate from Churchill, Man., to Fort Saskatchewan, Alta., has been reduced to 1.2 cents per ton mile.



Last year it was announced that considerable research had been carried out by Mitchell Engineering Ltd. into the possibility of under-sea freighting by submarine through a northern Canadian port in the vicinity of Hudson Bay. According to these reports the giant under-water craft "Moby Dick" is ready for construction in the United Kingdom. Designed primarily for ore transportation, "Moby Dick" as planned would be the world's first nuclear-powered cargo vessel and at 50,000 tons nearly ten times bigger than any previous submarine.

During 1958, some 190,000 tons of freight were moved by barge north from Waterways, Alberta.

Serving the Eastern and Arctic Access Division, Hudson Bay is free of ice from about mid-July to mid-October. In addition to shipping from St. Lawrence River ports and from overseas, smaller craft are available for transport within Hudson Bay

from Moosonee, Ont., and Churchill, Man. The Hudson's Bay Company make one trip a year from Montreal to trading posts in the Arctic and sub-Arctic as far as Baker Lake.

In Quebec, rail communication to the north only reaches Schefferville, south of the area under consideration; the Ontario Northland Railway operates from Cochrane, Ont., to Moosonee on James Bay; and Northern Manitoba and parts of Saskatchewan are served by a single-track government-owned line, operated by C.N.R., from Hudson Bay Junction to The Pas, Man., where one branch goes to Lynn Lake and another to Churchill. A spur connects Sipiwest to Thompson.

Some roads are available in northern Manitoba and Ontario and a "Roads to Resources" development programme should benefit transportation costs to large mineral deposits; though not so much to small isolated producers.

THE PLIGHT OF BOLIVIAN MINING

The desperate present situation of Bolivia's nationalized mines has been analysed in a statement published by Comibol, the state organization controlling some 72 per cent of the country's total mining activities.

Measures should be taken, Comibol said, to increase output to an annual total of 20,000 tons of fine tin. To this end, a capitalization goal of up to \$30,000,000 and immediate investment of \$7,500,000 should be aimed at. These would be used (a) to increase productivity to its pre-1952 levels, (b) to achieve remunerative production and thus be able to pay better wages, (c) to finance a Bolivian smelting plant to treat mineral concentrates locally, and (d) to increase exploitation of present deposits, improve output in those where productivity is on the decline, and to search for new reserves.

Comibol stated that in 1958 it suffered a net loss of 100,019,014,236.51 Bolivianos to which had still to be added continued losses throughout 1959. Gross value of production at its mines in 1952 (when the nationalization programme entered into effect) was \$98,000,000. This had gradually fallen to \$42,000,000 in 1959.

The following reasons were given for continued low production at Comibol's mines: lack of capital; lack of materials and machinery; trade union anarchy, low labour yield and excess of officialdom, as well as an adverse world market situation (which has ceased to exist).

Comibol started operations in 1952 when nationalization was imposed by the present revolutionary government. How its economic collapse affects the whole country may be realized when it is remembered that 90 per cent of Bolivia's total exports consist of minerals, 65 per cent of which are tin, and 21 per cent lead and silver.

MINING IN THE PHILIPPINES

The president of Benguet Consolidated, Inc., has told shareholders that the company is considering the eventual sale of some of its holdings in subsidiaries to Filipino interests, in line with the government's "Filipino first" policy.

On May 8 Acoje Mining Co. inaugurated a Carpcio high-tension electromagnetic separator plant at its mines in Sta. Cruz, Zambales. The plant is designed to process chromite ore into a product that will be competitive in foreign markets. In the absence of U.S. buying, Japan was again the sole purchaser of the company's chromite ores.

Palawan Quicksilver Mines, Inc., last year scored gains in spite of the lower world price for mercury and increased local taxes and higher commodity prices. Barter privileges, granted to the company, contributed to gross profits totalling 263,444.13 pesos. However, the barter incentive was removed by the National Economic Council following the passage of Republic Act 2261. Reconsideration of the NEC decision is now being sought.

Experiments to treat low grade ore have been started and, if successful, the equipment required will be obtained abroad. The company's president stated that it is only through utilization of the low grade ores or fines that the mine's life can be extended and competition from foreign producers can be met.

Drilling equipment of the Philippine Bureau of Mines has been shipped to Catanduanes to begin coal drilling operations in the province. A team will supervise drilling operations to determine the quality, quantity and depth of coal deposits at Panganiban along the Panganiban-Caramoran road. The test is connected with the project for an integrated steel mill in the Philippines.

Soviet Aid to Asia and Africa

OF CRUCIAL importance to the future of Western democracy is the struggle for the moral and political leadership of the emergent and, for the most part, still uncommitted nations of Africa and the East. This battle is being fought mainly with the weapons of financial and technical aid. Provided that the emergent nations show themselves capable of extracting the maximum benefits from a situation which, from their point of view, could scarcely have been better timed, this could well be a war with no losers and from which the whole world was the ultimate gainer.

Only recently has the magnitude of the Russian challenge in this critical field begun to be fully apparent to the West. In a review of Soviet economic aid to countries of Asia and Africa, published in *Pravda* on February 9, Semyon Skachkov says that the U.S.S.R. is now giving economic and technical assistance to these countries in the construction of over 250 industrial and agricultural undertakings of various kinds.

Skachkov, who is Chairman of the U.S.S.R. Council of Ministers' State Committee for Economic Relations with Foreign Countries, writes that the enterprises concerned are mainly iron and steel mills, engineering factories, ore and coal mines, coal concentration plants, factories for the chemical, oil, pharmaceutical, textile and sugar industries, power stations and irrigation projects, ports and railways, hospitals, educational establishments, and geological prospecting work.

He adds, however, that this is far from being a complete list of the projects being carried out with Soviet aid. More than 20 undertakings launched in these countries with Soviet assistance already have been put into service. In his article, Skachkov surveys the work that is being done in a number of countries. Reference here is made only to projects associated with the mining and metallurgical industries.

India

In India, the first departments and units of the big iron and steel works at Bhilai were put into operation early last year with Soviet co-operation. A blooming mill, a second coking battery, a second blast furnace, a second open hearth furnace, a sulphuric acid shop and a continuous billet mill went into service by the end of the year.

About 600 Soviet workers employed in building and installation work and 200 Soviet specialists with experience in the construction and running of steel plants are now at the Bhilai Works.

The construction site at Bhilai, says Skachkov, is a school for the industrial training of Indian technicians.

Heavy engineering plants, factories making mining equipment, oil refineries, glass factories, coal mining enterprises and large power stations are also being built with Soviet technical aid. Soviet geologists and oil men are giving technical assistance in geological prospecting and in drilling for oil and gas; they have helped Indian oil men to discover oil and natural gas deposits. Assistance is being given in setting up an institute of technology in Bombay.

It is claimed that the heavy engineering and mining equipment factories will be the first enterprises of their kind in India and will lay the foundations on which India will be able to develop her own up-to-date machine-building industry.

The coal mining enterprises will provide about 20 per cent of the increase in coal output planned for the second five-year period in the state-owned sector of Indian industry. A mining equipment plant which the Indian Government expects to put up in Durgapur, near Calcutta, has been designed by Moscow engineers. It will manufacture cutting and loading machines,

underground electric locomotives, scraper and belt conveyors, surface mining machinery, and winches. A group of Indian engineers who will be working at the Durgapur plant will study Soviet know-how in Moscow.

In September of last year a new agreement was signed in Moscow under which the Soviet Government allowed the Indian Government a credit of 1,500,000,000 roubles for the construction of industrial enterprises during the period of India's Third Five-Year Plan in 1961-65.

Other Countries

In the United Arab Republic, agreements have been concluded providing for the construction or extension, with technical assistance from Soviet organizations, of more than 100 undertakings, including six metallurgical plants. Geological prospecting work will also be carried out under these agreements.

In Afghanistan, Soviet experts are giving technical assistance in carrying out geological prospecting and surveying work (including an aerial survey for oil in Northern Afghanistan), in working out measures to increase the output of iron ore and in the reconstruction of highways.

In Indonesia, under a general agreement for economic and technical co-operation, Soviet agencies are to help Indonesian organizations to build an iron and steel works with a capacity of 100,000 tons of steel a year, a superphosphate plant with a capacity of up to 100,000 tons a year, and motor roads on Kalmantan Island with a total length of 662 kilometres (about 410 miles).

In addition the Soviet Union will supply equipment for a concentration plant at a sulphur mine and will give technical assistance in prospecting for sulphur and phosphates.

Soviet organizations are helping the Republic of Iraq to build over 35 industrial enterprises and projects and the U.S.S.R. is providing credits for this purpose. These projects include an iron and steel works and a sulphur plant.

Soviet organizations will carry out designing and prospecting work to enlarge the irrigation system and to reconstruct railway facilities and they will undertake geological work to determine the reserves of useful minerals.

Soviet organizations are also helping in the construction of several important projects in Cambodia, Burma, Yemen, Ceylon and Nepal.

In 1959 the Soviet Government signed agreements with Ethiopia and the Republic of Guinea under which economic and technical assistance will be given in the construction of a number of industrial enterprises in those countries.

Extensive aid to economically underdeveloped countries is also being given by the other socialist countries, as well as the Soviet Union. In this co-operation the main efforts are being directed towards establishing an up-to-date industry at the foundation of the countries' economic independence.

Skachkov adds that the Soviet Government as a rule grants economically underdeveloped countries credits on easy terms —2½ per cent interest with repayment within 12 years. The repayment of credits, he states, is not a burden for the economies of those countries, as the credits go towards building enterprises which within 12 years will ensure an income making it possible, not only to pay for the credits together with the interest, but also to make considerable capital investments in the country's economic development.

Moreover, as a rule, the credits are repaid, not in foreign currency, but by supplies of goods coming within the range of the ordinary exports of the underdeveloped countries.

ITALIAN MINING RESULTS IN 1959

SOME 60,000 tonnes of lead and 130,000 tonnes of zinc was mined in Italy last year, according to a recent report from Rome. Some 43 per cent of the country's lead-zinc ore sales went to the fellow members of the Common Market *bloc*, covering 11 per cent and 22 per cent of total demand, respectively.

It is now believed that further vast reserves of lead-zinc ore are present in the Montevicchio deposits on Sardinia under present workings. These are believed to contain something like 500,000,000 tonnes of ore. The Montevicchio site has already produced ore containing an accumulative total of 1,200,000 tonnes of lead and 500,000 tonnes of zinc. Other main producing sites are elsewhere on Sardinia, in the Alps and Tuscan hills and in Calabria and Sicily, four main groups—one of them State-owned—virtually controlling the mining industry.

Lead is at present refined at three plants, situated at Monteponi on Sardinia with an annual capacity of 12,000 tonnes, at San Gavino Monreale on Sardinia (36,000 tonnes) and Pertusola in La Spezia (24,000 tonnes). A flotation plant is being erected at Monteponi with a view to obtaining calamine and lead concentrates.

Società di Monteponi

Società di Monteponi (Turin), leading in Italian lead and zinc mining, and whose activities are mostly concentrated in Sardinia, earned a net profit of L. 112,000,000 for the year ended December 31, 1959, contrasting with the loss of L. 44,500,000 suffered in 1958 (the present rate of exchange is L. 1,741 to the £). The improved results for 1959 are mainly due to the halt in the prolonged downward movement of the international quotations for lead, as well as to the upswing of the international prices for zinc.

The Campopisano mine produced 121,000 tonnes of zinc oxides and zinc sulphides. The Tiny mine produced 2,000 tonnes of lead concentrates, while the yield of two secondary mines, S'Ortu Becciu and Montescorra, proved equally satisfactory. On the other hand, two lead mines, Macciurru and Orbai, were kept inactive owing to the low lead quotations obtaining on the world market.

The company's coal mine near Terras Collu, in the same region, produced 51,000 tonnes of coal, this output being wholly absorbed by the company's power station at Porto Vesme, to the south-west of Monteponi. The local lead smelting plant treated 16,627 tonnes of ore, while the electrolytic zinc plant produced 8,392 tonnes of cathodic zinc, and 42,460 lb. of cadmium.

At the company's works at Vado Ligure, to the west of Savona port (between Genoa and the French frontier) the zinc smelting plant produced about 500 tonnes of zinc more than the total produced in 1958, while the production of monohydrous sulphuric acid rose to 27,428 tonnes, being 2,000 tonnes higher than in 1958. Other zinc smelting operations take place at the electrolytic plant at Monteponi (8,000 tonnes), Crotone in Calabria (24,000 tonnes), Porto Marghera in Venice (20,000 tonnes) and Nossa in Lombardy (24,000 tonnes).

Italy's lead works also produce a total of 40 tonnes of silver annually and the zinc plants 200 annual tonnes of cadmium and 120,000 tonnes per year of monohydrate sulphuric acid. Additionally, copper and bismuth are produced at San Gavino Monreale, cobalt and germanium at Porto Marghera and quicksilver at Monteponi and Vado Ligure.

The company's centre for metallurgical research completed in the course of 1959 its studies relating to the production of germanium monocrystals for use in the electronics industry, and is at present setting up a small pilot plant for the commercial production of such crystals.

The subsidiary concern "Rimisa" continued its exploratory activity within its Sos Enattos concession; the ore deposit already located was found to be larger than originally thought. Another subsidiary, Montevicchio S.A., working the Montevicchio mine some 7½ miles to the west of Pabillonis (37 miles to the north-west of Cagliari, the Sardinian capital) closed its accounts for 1959 with a net profit of L. 258,200,000 of which the dividend absorbed L. 240,000,000.

Finally, Pigmenti B.M., another subsidiary, at Genoa, converted in 1959 about 1,630 tonnes of lead into oxides and approximately 1,090 tonnes of zinc into zinc white.

Stabilimento Minerario del Siele (Rome), the smaller of the two Italian quicksilver producing concerns, closed its accounts for 1959 with a net profit of L. 358,000,000 more than double that of L. 160,000,000 recorded for the preceding year. Accordingly, the dividend paid for 1959 amounted to L. 200 as against L. 100 for 1958.

The company has not formulated any precise schemes for the future. A retrospective survey delivered at the recent general meeting, however, underlined the fact that the temporary three-year suspension by the Italian Government of the production tax on quicksilver metal (L. 32,000 a flask) as from February 19, 1959, has not brought about any tangible relief to the industry owing to the substantial contraction in the world quotation for quicksilver which occurred simultaneously in 1959.

The Sulphur Industry

The Sicilian sulphur producers, who with 95 per cent of total Italian production are the second largest sulphur source in the world after the United States, are hoping to raise their total annual output to some 320,000 tonnes by the increasing of production capacity from the present level of 55 to 60 per cent to a future stand of 85 to 90 per cent. This increase is based on projects for the modernisation of existing mines and the concentration of forces on the more economic mines. At present the failing Sicilian industry produces some 200,000 tonnes of pure sulphur per year; exports over the first ten months of 1959 were worth only 580,000,000 lire as compared with a value of 667,000,000 lire in the same period of the previous year.

Italian experts called in to study the problems of the heavily-subsidized industry strongly recommend a big cut in the production of natural sulphur and a greater use of sulphur rather than pyrites in the production of sulphuric acid. After long negotiations the Veruschacht concern of Essen has been granted a large-scale development and research order connected with the Italian sulphur industry costs, of which projects are estimated as some £135,000, by the Ente Zolfi Italiano body. Work on the programme is expected to take about a year.

Financing of the reorganization of the country's sulphur industry as a whole is to be helped by the granting of 40,000,000 lire to Italy by the common market commission for the aiding of production and marketing modernization. A committee of experts from the six-country executive is to plan the spending of the sum, which will be forwarded through the European Investment Bank.

Machinery and Equipment

Drill Rig for Long Hole Stope Drilling

The development in South Africa of a new drilling unit—the Holman Thruster rig—for use as a long hole stope drilling machine is announced by Holman Brothers (Proprietary) Ltd., Johannesburg, the South African subsidiary company of Holman Brothers Ltd., Camborne. The new Thruster rig has been developed by Holman Brothers (Pty.) Ltd., to meet the increasing need in African mines for an extremely accurate, compact and easily portable long hole driller for use in limited space and headroom, particularly in flat and narrow stopes. Many of these drilling units have been sold in South Africa and a number of mining concerns, including Stilfontein G.M., have standardized on the Thruster for all long hole stope drilling duties.

This drilling rig was evolved from an early experimental model which comprised a rock drill, powered by a feed cradle, supported on a lightweight tubular steel frame which could be adjusted in height by means of screw-end jack bars. Difficulties were experienced due to the weight of this unit which prevented its easy movement underground. After further research into this problem a completely new feed system for this type of drilling application was discovered and the Holman Thruster was successfully developed.

The new feed system comprises essentially a cylinder and piston assembly, similar to the retractable air leg, which provides the necessary feed to the drill. The cylinder is horizontally mounted directly behind the drill on a slide rail, and the feed pressure is controlled by a twist grip throttle mounted at the end of the piston rod near the back end of the drill. The slide rail assembly is supported on two tubular steel cross members which are in turn supported on four adjustable screw-end jack bars.

The piston rod is fitted with two air passages, one to provide air behind the

piston for forward movement and the other which vents in front of the piston for its retraction. A valve controls the simultaneous change-over of air to the front or rear of the piston. The cylinder body is also designed to move forward and backwards in a slide during the advance feed and drill extraction operations.

When the cylinder is in the extreme outward position away from the rock face and the piston is fully withdrawn inside the cylinder, air is admitted behind the piston which pushes the piston rod towards the face and provides the first stage feed for the drill. When the piston is fully extended the control valve is operated which admits air in front of the piston. The piston with drill attached remains stationary because of the weight of the drill and the frictional resistance of the drill steel in the rock.

The cylinder mounted in the collar slide is, therefore, drawn towards the face. When the cylinder has moved up to the end of the piston rod, a gravity-operated slide gate mounted to the cylinder slide operates, which locates in an annular groove on the outward end of the cylinder body. This prevents the cylinder from moving when air is again applied behind the piston which starts the second stage of feed to the drill.

To withdraw the drill the sequence is reversed. Air is first admitted in front of the piston which causes the piston rod, with drill attached, to move into the cylinder. When fully retracted the slide gate is lifted so that the cylinder is free to move outward in the cylinder slide and air is switched to behind the piston. At the end of its stroke the cylinder is locked in position by a second sliding bar which prevents further movement of the cylinder. Air is re-applied in front of the piston which causes the piston rod and drill to retract fully.

The machine is designed to be dismantled easily for movement from face

The new Holman Thruster drill rig developed for use in South African mines as a long hole stope driller. The rock drill is in the extreme outward position on the slide rail and the cylinder protrudes through the slide gate collar ready to begin the first stage feed of the drill



to face and also to allow easy removal for maintenance, etc. The unit can be assembled without the use of a spanner while the heaviest single part is the rock-drill. An important feature of the Thruster is that it is also suitable for drilling footwall holes when placed in an underslung position.

DEVELOPMENTS IN PROTECTIVE HELMET DESIGN AND MANUFACTURE

Britain is taking the lead in an attempt to get world-wide standards adopted for safety headwear worn by industrial and mining workers. On the initiative of the British Standards Institution, the Protective Headwear Manufacturers' Association and other safety interests, a new committee of the International Standards Organization has been set up. The committee holds its first meeting later this year at British Standard House in London (October 12 to 14). It will be attended by helmet makers, safety organizations and government representatives and other experts from many parts of the world.

The new 1960 range of Texolex safety helmets feature reinforcement of the low crown shell. Many industries, however, use the high domed cap which is supplied in the No. 11 cap model with a reinforced brim. The manufacturers, *Malcolm Campbell (Plastics)* offer various types of cradles to suit the different conditions in which they may be used. They recommend the fixed sizes of basil leather headcradle with a patented retainer piece attached, which fits closely round the back of the neck, instead of a chinstrap, and avoids tilting if the peak is subject to impact. Teamers and welding helmets are also manufactured.

The shells of these Texolex safety helmets are made from high-pressure laminates of Lancashire cotton and resin and will withstand immense impacts. Texolex helmets are supplied with or without lamp brackets.

The new M8/11 Cromwell reinforced fibre cap, manufactured by *Helmets, Ltd.*, and designed to afford the maximum degree of protection required by B.S. specification 2095 for Industrial Helmets (Light Duty), has a shell of high-density fibre, with very high impact and penetration resistance. The cradle, with fixed PVC coated nylon webbing and adjustable headband, gives maximum shock absorption with adequate head clearance.

The whole is impervious to moisture, perspiration, hair oils, etc., and the complete helmet can be easily washed with a mild detergent. A special leather brow band made from thin surgical-quality chrome hide, is available for use in hot climates. The detachable Polythene headband, supported on flexible nylon mountings is adjustable to half sizes from 6½ to 7½. The M8/11 model needs no chinstrap.

A new helmet, the Invincible, manufactured by *George Angus and Co.*, is claimed to be the first plastic helmet to satisfy B.S. 2826 Industrial Safety Helmets (Heavy Duty). With a smooth surface, oval shape with extra height in front, to allow being worn "slightly tilted" back, and curved brim, these helmets are also proof against electrical hazards, and resist side blows. This plastic, specially imported from Australia, does not become brittle at temperatures, well below freezing point but is unsuitable in very hot locations.



Optoshield Ltd. have been appointed sole distributors in Great Britain for Ampco spark-resistant tools. Over 400 different tools, some of which are shown on the illustration above, in Ampco metal, beryllium-copper or Monel metal, are included in the range

Angus and Co. have also recently brought out a new glass fibre helmet, the Fortress, a general purpose helmet affording good protection against all normal industrial hazards, and satisfying the requirements of B.S. 2826, including the optional electrical tests.

Both helmets have leather headbands, adjustable to five sizes, terylene webbing and lacing, are non-flammable, and can be fitted with lamp brackets.

IMPROVED DESIGN OF FLOWMETER

An Atomic Energy Authority engineer has produced an improved design of flowmeter which does away with a major snag of many existing types — their internally - tapered glass calibration tubes.

Such tubes are expensive to manufacture because of the internal grinding and polishing operations needed to produce a high standard of accuracy on the internal taper. Also, apart from their fragility, it is difficult to heat them when operating with viscous liquids because any heating jacket must be cut away to allow the level of the float to be read off against graduations on the tube walls.

His solution is to use an ordinary straight-bored tube to carry the liquid under observation but to place inside this tube an externally tapered rod on which an annular float can move up or down with increasing or decreasing flow speed.

This rod would usually be made of metal and the taper could be formed to high accuracy by ordinary machine-shop practice. With viscous liquids, heat could be provided directly by passing an electric current through the rod, or by using a hollow tube containing an electrical heating element, or again by passing a hot liquid through such a tube.

Further information is available from the Patents Exploitation Officer, U.K. Atomic Energy Authority, 11 Charles II Street, London, S.W.1.

A newly revised bulletin describing Symons intermediate cone crushers has been released by Nordberg Manufacturing Co., Milwaukee, Wisconsin, U.S. Rugged yet relatively lightweight, these crushers are built in 22 in. and 30 in. sizes with fine or coarse type crushing cavities for second and third stage reduction crushing.

A schematic cross section of a 30 in. Symons cone crusher identifies the principal features of the intermediate cone crushers. The advantages of controlled feed and even distribution are featured along with a table giving average capacities at various settings and feed openings. The Symons principle of reduction crushing is explained and the crusher's lubrication system and automatic protection against damage from non-crushable material are described.

The revised eight-page, two-colour bulletin also features low cost per ton of crushed products with Symons intermediate cone crushers and their adaptability for use in mobile crushing plants. The bulletin, No. 236A, is free.

The Gourock Ropework Co. Ltd., has published the Gourock Steel Wire Rope Manual. There are two main sections, the first dealing with the manufacture, handling and installation of steel wire ropes and the second giving weights and breaking strains of all standard ropes normally used. The second section has been tab-indexed and much care given to the layout so that the information in it—required as it so often is very quickly—would be available in its most accessible form. This is the first of a new set of three manuals, the other two covering ropes, cords and twines in vegetable and synthetic fibres, and the very extensive range of proofed and unproofed canvases, Birkmyre's cloth, filter cloths, etc., respectively.

The Baum jig is being employed to beneficiate aggregate at the Kalamazoo plant of the American Aggregates Corporation where it eliminates the lighter unwanted fraction. The feed to the jig is all $-1\frac{1}{2}$ in. $+7\frac{1}{2}$ in. gravel and a cut is made at around a density of 2.58 in two cell units and a bed depth of no less than 12 in. is used.

Incorporating a number of design improvements in the power train and front suspension, a new DW15 200 h.p. tractor, Series F, has been announced by Caterpillar Tractor Co., U.S.A. A 30 per cent increase in tooth beam strength has been gained by developing coarser pitch bevel gears and pinion. Floating sintered steel bearings, used for the four differential pinion gears, give increased bearing support capacity, and never "run dry" when started up as their porous nature retains oil.

The front wheel spindles have been improved by cold rolling after machining, which eliminates surface stress raisers resulting from forging, and increases service life by 50 per cent. This tractor is mated with the No. 428 Low-bowl Scraper, of 13 cu. yd. struck capacity. The 23 per cent torque rise of the engine results in less gear shifting and more rapid acceleration.

Equipment Digest

Just released by The Thew Shovel Co. is a new 20-page catalogue on their $\frac{1}{2}$ yd., crawler mounted Lorain Model 26. The booklet gives details of machine's construction and job applications for use as shovel, crane, clamshell, dragline, hoe, log loader, pile driver and magnet. The book is produced in 2 colours and contains photographs of component parts and field pictures of machines in action. Bulletin 26751-0 from The Thew Shovel Co., Lorain, Ohio.

A concisely-written 12-page booklet on Flexipipe mine and tunnel ventilation tubing manufactured by Bemis Bro. Bag Co., United States, is available upon request. Included in the booklet are diagrammatic illustrations of the use of Flexipipe for various shaft ventilation systems, tables on flexible tubing friction loss, drawings of suspension equipment, photographs of actual installations and descriptions of the various grades of Flexipipe tubing available. A copy of the free booklet can be procured by writing Bemis Bro. Bag. Co., 601 S. 4th St., Dept. M., St. Louis 2, Mo., U.S.A.

Development work has been, and is still being, carried out on Piton fluorescent coatings by Allweather Paints Ltd. Used in conjunction with a suitable sealing or priming coat, such as Piton standard emulsion or Piton moist concrete primer, the Piton fluorescent coating imparts to the eye from the surface the full impact of the fluorescent pigment.

It is envisaged that there will be use for such a coating for certain overhead, wall and door areas in workshops, where such areas are required to be instantly eye catching under varied light conditions. For fire exits, fire fighting equipment, important numerals and notices, etc., are other suggested applications. It is anticipated that the coating will show reasonable durability but, that the fluorescent effect will be of gradually diminishing quality after 6/12 months exterior exposure and after up to 12 months interior exposure. The coating has a covering capacity of approximately 30-40 sq. yds. per gal. and is only available for application by brush.

Attention is being drawn more and more to the necessity for adequate protection from flying fragments and similar hazards to the eye in modern industry. A few months ago, Northide Ltd., extended their service to industry to cover goggles and eyewear and now they announce their 1900 safety spectacle as an addition to their already comprehensive range.

The new spectacle is made entirely of nylon and weighs only half an ounce. It can be completely dismantled by hand and all components are replaceable and interchangeable. This new safety eyewear can be worn with perfect comfort over ordinary spectacles with no fogging or distortion.

Another feature, designed to give personal fit, is the telescopic arms which allow the wearer to adjust the spectacle to give perfect individual fit.

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At the recent conference under the chairmanship of the Ministry of Industry it was decided in principle to put into immediate execution a programme for the intensification of efforts to exploit Greek underground mineral resources. The Greek Institute of Geology and Sub-surface Research has completed the stratigraphic survey of known bauxite deposits in the country and issued the relevant geological maps. In the course of prospecting work conducted at Kozani, it has found important deposits of chrome suitable for metallurgical processing. The following research programmes have been drawn up: (a) for ferrous ores, in Crete, Thassos and Serifos; (b) for copper deposits, in Chalkidiki; (c) for zinc and lead deposits in Western Thrace; (d) for lignite at Amyntaion and Vevi. Four agreements have already been drawn up for precious metal prospection, and the necessary deposits of 100,000 drachmae for each concession have been paid in.

Prospecting is to be speeded up of coal deposits at Varpalota in Hungary. Heavy duty Russian deep borers are now being brought into use. The coal is needed for large-scale industrial use.

More than 100 small plants for the excavation, dressing and manufacture of copper, aluminium and other non-ferrous metals were built in various parts of China in the first three months of this year and more are planned, according to news reports. This movement is especially active in Shantung, Hopei, Anhwei, Hunan and Szechuan.

The first two pilot plants to experiment with roasting processes to change the ore chemically to a magnetic form are to be built in the western portion of the Mesabi iron range in Minnesota. M. A. Hanna Co.'s plant, costing about \$2,000,000, near Cooley, will have a capacity of about 10 tons per hr. of iron ore, and the Oliver Iron Mining Division of U.S. Steel Corp., will build a similar plant at Coleraine, of 5 t.p.h.

The N.C.B. announces that a new colliery at Daw Mill near Over Whitacre in the Warwickshire coalfield is to be developed, with an annual capacity of 600,000 tons. Reserves are estimated as sufficient for 70 years at this rate, and 1,400 men will be employed when the new pit reaches full capacity. Most of these men will continue to go underground at Dexter Colliery, but the coal will be wound at Daw Mill. A coal preparation plant of the latest design is planned, and total cost of the scheme is estimated at about £4,000,000.

Czechoslovakia is to import quantities of iron ore from Guinea under a recently-signed trade pact.

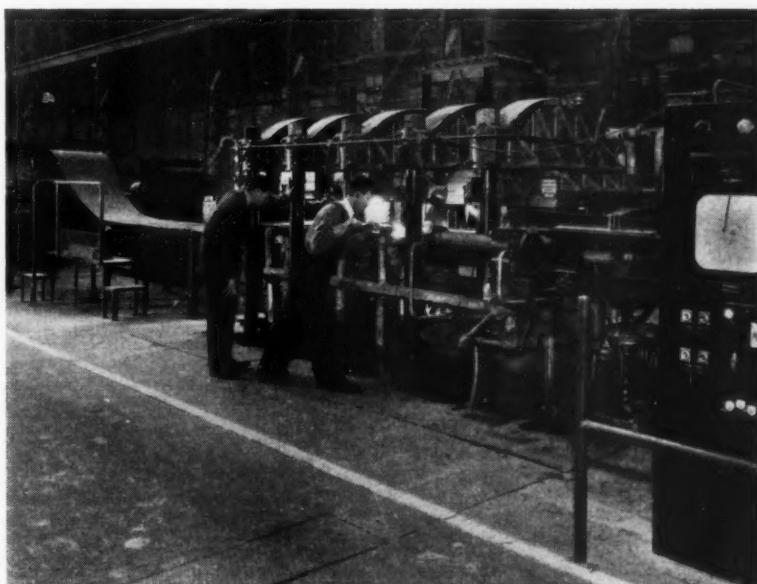
Ilzeder Hütte A.G., at Peine, West Germany produced 2,760,000 tonnes of iron ore in 1959, compared with 2,550,000 tonnes in 1958. Ilzeder's raw steel output rose to 766,000 from 698,000 tonnes but coal production fell from 1,430,000 to 1,310,000 during the same period.

Poland is to expand the Rybnik coal-fields of Upper Silesia, rich in coking grades of coal needed for the national steel industry. Some seven new mines are to be opened in the area, between 1961-65, increasing total annual production by 3,000,000 tonnes by 1965. This should meet the increased demand expected from the steel industry, which is also expanding. Total cost of the expansion scheme, including housing for workers, will be, according to *Trybuna Ludu* about 9,000,000,000 zloty.

Coniagas Mines at Bachelor Lake, in north-western Quebec is to commence production early in 1961, of silver-lead-zinc at a rate of 350 tons of ore daily. Ore reserves as last reported totalled 460,000 tons averaging 15.7 per cent zinc, 1.04 per cent lead and 8.77 oz. silver per ton. Among other companies reported to be considering developments in an area some 80 miles north of Senneville are Sogemines, who are reported to be negotiating with several smaller companies holding stakes in the Bachelor Lake district, which is considered as a western extension of the Chibougamau area.

A new organization has been set up by Dunlop's Belting Division at the company's factory at Speke. The organization is based on a recently-completed industrial laboratory. Not only does it enable Dunlop Belting Division to take full advantage of new materials and new processes but also reinforces production control and ensures that specifications are closely maintained during manufacture. Although the industrial development laboratory of the Dunlop Belting Division is entirely self-contained, from compound and textile preparation up to the manufacture and evaluation of finished belts, it has the great advantage of being able to draw upon the results of work carried out at the Dunlop research centre in Birmingham. All the long-range studies carried out there, coupled with the shorter-term investigations of Development Division, are available for the practical consideration of Belting Division. A joint committee meets regularly to discuss projects and to initiate new research.

Manufacturing an experimental belt on an automatically-controlled pilot plant press in the Dunlop factory



Personal

The Transvaal and Orange Free State Chamber of Mines at their annual meeting held on June 27, elected the following officers and executive committee to serve for the period 1960/61: president, C. B. Anderson; vice-presidents H. C. Koch and W. S. Findlay; Executive Committee: Sir George W. Albu, Bart., P. H. Anderson, B. L. Bernstein, L. D. Browne, Dr. W. J. Busschau, C. W. Engelhard, R. B. Hagart, C. S. McLean, H. F. Oppenheimer, T. P. Stratton A. A. von Maltitz, D. A. B. Watson.

★

Dowty Group has announced the following appointments: Mr. F. Bastow has been appointed managing director of Dowty Seals. Mr. C. F. Porter and Mr. K. G. Ware have been appointed to the board of Dowty Mining Equipment; Mr. C. N. King has been appointed to the board of Dowty Hydraulic Units.

★

British Belting and Asbestos announce the following appointments to their board of directors: Mr. P. H. A. Mount, Mintex Division sales manager; Mr. D. M. Pearson, Mintex Division works manager; Mr. J. H. Fenton, personnel manager; Mr. C. M. Fenton, Asbestos Division works manager.

★

Mr. Omer G. Voss, manager director of International Harvester in Great Britain since 1954, is returning to the U.S. for re-assignment with the parent company.

★

Armstrong Whitworth (Metal Industries) announce the appointment of Mr. McK. Wright as resident area sales manager, Middle East and of Mr. G. Chesham as special representative to the Soviet bloc of countries.

★

Mr. John E. Lennard has been appointed general sales manager of Richard Hill Ltd., a member of the Firth Cleveland Group. Mr. Lennard will be based for the present in London.

★

Sir Alexander Fleck has accepted to be president of honour of the Symposium on "Powders in Industry: Properties and Principles of Application" to be held on September 29-30, 1960. He will also open the Symposium, which is being organized by the Surface Activity Group of the Society of Chemical Industry.

★

Mr. T. H. Kelsey, whose appointment as assistant general manager of the Witton Engineering Works of The General Electric Co. was announced in October 1958, has now been appointed deputy general manager to Mr. J. J. Gracie, director of the company, and general manager of Witton Engineering Works.

★

Richard Sutcliffe, Ltd., announce that Mr. Fred Smith has been appointed district technical manager for the North of England, and Mr. M. R. Moore has been appointed general manager.

Metals and Minerals

Rising Production of Beryllium Metal

Continued progress in all sections of the beryllium industry is reported from the U.S. Production of beryllium metal rose to a new peak in 1959, which was the second year for the five-year contracts awarded to the two domestic producers by the Atomic Energy Commission for annual delivery of 37,500 lb. of nuclear-grade beryllium. The Beryllium Corporation's plants at Reading and Hazleton, Pa., and the Brush Beryllium Co. plant at Elmore, Ohio, were the only ones in the U.S. that processed beryl to beryllium metal, alloys and compounds. Data on production are classified information.

Increasing interest was shown in the use of high-purity beryllium and beryllium oxide in special nuclear applications, reports the *American Metal Market*, as well as in the use of high-purity beryllium oxide in electronics and aircraft. Beryllium-copper was used in aircraft, business machines, electronics, radios electrical appliances and automotive parts.

Three members of the U.K. Atomic Energy Authority, accompanied by a representative of Imperial Chemical Industries Ltd., recently visited the Beryllium Corporation's Reading and Hazleton plants. Information was exchanged on such topics as beryllium clad fuels, beryllium tube product specifications, and irradiation effects on cladding materials in fuel assemblies.

The A.E.A. is currently studying the use of beryllium tubing in gas cooled reactors. High purity beryllium metal is made available to the Authority through Consolidated Beryllium Ltd., a firm jointly owned by the Beryllium Corporation and Imperial Smelting Corporation.

While U.S. domestic consumption of beryl in 1959 was the highest in history, domestic beryl production was the smallest since 1948, reports the Bureau of Mines, U.S. Department of the Interior. U.S. consumption of hand-sorted beryl totalled 8,173 s.tons, mine production 328 tons, and imports 8,038 tons. At the end of the year consumer stocks amounted to 3,871 tons.

The G.S.A. bought hand-sorted beryl through its programme for encouraging domestic production, the cumulative total since the start of the programme in 1952 reaching 2,487 tons. The programme terminates on June 30, 1962, or when 4,500 tons of beryl has been delivered, whichever occurs first. Production was from about 100 operations in seven States.

The Bureau of Mines continued its search for beryllium deposits and planned to use a nuclear device and also a mobile laboratory containing a spectrometer for quickly testing rock samples in the field. Accelerated research was continued on the recovery of disseminated beryllium ore from various deposits, extractions of beryllium from various grades of concentrates, and purifying the metal.

The discovery of what is claimed to be potentially a significant new deposit of beryllium ore in the Topaz Mountain region of Utah has been reported

by Vitro Minerals Corp., which is jointly owned by the Vitro Corp. of America and the Pittsburgh Coal Co., Indiana, Pa. The report states that much of the ore lies close to the surface, and could conceivably be mined by open pit, low-cost techniques.

NEW ALUMINIUM PLANTS

Projects for new aluminium plants have recently been reported from a number of countries. In the U.S. The United Pacific Aluminium Corp. of Los Angeles plans to break ground this summer for a new aluminium smelter at Longview, Washington, on a 300-acre site near Columbia River. Two potlines will be built, one of which is expected to be ready for production early in 1961. The new plant will draw on bauxite or alumina imported from the Orient, Australia and Africa.

Last week (p. 747) we stated that Péchiney was reported to have reached agreement with the Greek Government regarding the establishment of an aluminium plant in Greece. The Greek Government has since announced the setting up of a \$75,000,000 aluminium industry, agreement to this effect having been reached with a consortium including Péchiney, co-operating with other French firms, and the Greek shipping magnate Mr. Stavros Niarchos, who will probably co-operate with Reynolds Metals. The Greek Government-sponsored Industrial Development Corporation will contribute to the \$25,000,000 statutory capital of the aluminium company, which will also receive a Greek loan of \$10,000,000. The plans call for the use of local bauxite deposits and the installation of an alumina plant of at least 100,000 tonnes annual capacity (which can later be increased to 200,000 tonnes), producing 52,500 tonnes of aluminium a year. The government has also announced the forthcoming construction of two ancillary hydro-electric plants on the Acheloos river with a combined capacity of 150,000 kW. at a total cost of \$43,000,000.

An aluminium plant to be set up in Salem, Madras State, in the private sector, with the collaboration of the Italian firm of Montecatini, will produce not only aluminium ingots but also fabricated aluminium products. The estimated cost of the plant has been revised upwards to 130,000,000 rupees, and the project is expected to be completed in two years.

Péchiney is reported to be planning the erection of an aluminium plant at Dondo in Angola. Raw material will come from Guinea and there is also a possibility that local bauxite will be used.

The Austrian aluminium concern Vereinigte Metallwerke Ranshofen Berndorf is to spend 158,000,000 schilling (over £2,000,000) on the rationalisation of refining and semi-product units at its Ranshofen plant and a further 81,000,000 schilling on the expansion of its plants at Amstetten and Berndorf.

Last week the report that a new company had been jointly formed by Aluminium Ltd. and Enfield Rolling Mills (p. 746) was inadvertently captioned "New Anglo-U.S. Aluminium Co." It need scarcely be pointed out that Aluminium Ltd. is a Canadian company!

FERRO-MANGANESE IN INDIA

The Government of India has licensed a total capacity of 233,700 tons of ferro-manganese per annum. The target under the Second Five-Year Plan was fixed at 160,000 tons per annum—60,000 tons for estimated internal consumption of 1960-61 and 100,000 tons for export. Six units with a capacity of 93,000 tons have already been installed, of which five have started production. Three more units and the expansion of two existing units, giving a total additional capacity of 140,000 tons per annum, are expected to be completed by the end of the Second Plan period. The internal consumption of ferro-manganese in India, currently estimated at nearly 35,000 tons per annum, is expected to be 60,000 tons per annum once the target of 6,000,000 tons of steel ingot is achieved.

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A method of forming minute flakes of synthetic mica into paper-thin sheets has been discovered by scientists of the Bureau of Mines, U.S. Department of the Interior. It is stated that the product may prove superior to natural mica for certain uses in electronics.

RHODESIA'S CHROME DEPOSITS

The chrome ore deposits at Salukwe in the Southern Rhodesian midlands are larger than had been expected and will last for many years, according to a recent statement by Mr. G. H. Parkinson, general manager of Rhodesia Chrome Mines. This company owns two of the largest mines in the area, Railway Block and Peak, and Mr. Parkinson said that they were both working to the highest capacity in their history.

The demand for the type of lumpy ore found at Selukwe has recently increased and the mines are now exporting to Western Europe, Japan and South Africa. There is little demand, however, for the "Dyke" ore, of which the company has stockpiles at Lalapanzi and Gatooma, in the midlands, and at Beira in Mozambique. Mr. Parkinson described the long range outlook for chrome as very healthy and Selukwe prospects excellent.

★

The Turkish Chrome Committee met recently for the first time since the change of government. Private mine owners affiliated to the Committee stated that business had started to revive. Orders from European countries—ranging from 4,000 to 20,000 tonnes—had already been received. Demand was centred on chrome ore of 48 per cent and more, and prices offered ranged from \$33.50-\$34.00 per tonne.

The Chrome Committee reports that production as well as exports declined last year, owing to limited demand, while stocks were large. Chrome ore production of both privately and publicly owned mines together declined from 564,000 tonnes in 1958 to 259,000 tonnes in 1959, while exports fell from 502,000 tonnes to 307,000 tonnes.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

During the week the development of the copper market has become almost entirely dependant upon news from the Belgian Congo although the dock strike in the North-West of England had an effect on the backwardation during the middle of the period under review. The undertone of the tin and zinc markets has remained good, whereas the lead market has continued weak.

EUROPEAN COPPER OFFTAKE REMAINS GOOD

During the second half of last week news from the Belgian Congo indicated that there might be difficulties even before the date of independence but over the weekend the two leading politicians appeared to have come to a compromise and the threat of immediate trouble receded and with it the price of copper. The situation remains very unclear and there is still a possibility that there will be trouble within a very short time, especially in connection with the relationship of the Katanga Province to the rest of the Congo.

Additional buying appeared in the market following on the declaration of a dock strike in Liverpool but, after causing a backwardation of £12 per ton on Monday, its settlement was partly responsible for a considerable narrowing of the backwardation by the middle of the week. Stocks in official warehouses showed a fall of 25 tons at 3,358 tons.

Consumption, or perhaps more accurately intake, to European consumers remains at the recent high level and premiums are still being paid for nearby physical metal of which supplies are not too plentiful. In America the first ray of hope from the wire mills, brass mills and foundries came with the publication of the May statistics which showed that during May nearly 24,000 tons more copper would be needed for new orders as compared with the previous month: the requirement is the highest since the autumn of last year. During the month of May, however, the amount of refined copper used was down by almost 6,000 tons.

NEW TIN AGREEMENT

The five weeks' conference on tin in New York ended last week but at the time of writing only the broadest details have become available and these show that the terms of the new proposed agreement are very similar to those of the present scheme. It appears that the three price brackets are unchanged and that the mechanism for operating the buffer stock and export control is unaltered.

The main difference appears to be that the buffer stock has been reduced to 20,000 tons, of which 12,500 tons will be in metal and the balance in cash; there is also a stipulation that a period of export control cannot be declared unless it is found that at least 10,000 tons of metal are likely to be held in the buffer stock at the beginning of that period. It is also interesting to note that

consumer votes have been allocated to Western Germany and Japan, neither of which are members of the present agreement.

The document now has to be ratified by the various governments and from past experience this may take some time. A minimum of fifteen, which must include nine consuming countries, is required before the agreement can become effective. It is hoped that during the present week the details of the scheme will become available to enable a more informed comment to be made.

The market during the week has continued to show strength with cash changing hands at £800 per ton on Tuesday. Stocks in official warehouses rose 128 tons to 8,704 tons but in spite of this the backwardation has persisted and it is, therefore, obvious that almost the whole of the stocks must be in the hands of the buffer stock manager and this being the case it would not be surprising if a further sharp rise in the price level occurs.

On Thursday the Eastern price was equivalent to £798½ per ton c.i.f. Europe.

LEAD-ZINC STUDY GROUP TO MEET SEPTEMBER

The lead and zinc markets have continued to go their separate ways, the former showing weakness, the latter remaining steady. It is thought that the downward movement in the lead price has been helped by the liquidation of bull accounts on the realization that the problem of over-supply of the metal is a long way from being solved and that the finding of a solution is being rendered more difficult by the continued excellent offtake of zinc. There is to be a meeting of the Lead and Zinc Study Group in Geneva in September to consider the position.

The offtake of zinc remains high and there are no signs that the shortage will be eliminated in the very near future although the summer shut-downs of consumer plants may result in an easing of the situation during the next two months.

Closing prices are as follows:

	June 23		June 30	
	Buyers	Sellers	Buyers	Sellers
COPPER				
Cash ..	£257½	£258	£256½	£257
Three months ..	£247½	£248	£245½	£246
Settlement ..		£258		£257
Week's turnover	10,425 tons		9,675 tons	
LEAD				
Current ½ month	£71½	£71½	£71½	£71½
Three months ..	£72½	£72½	£72½	£72½
Settlement ..		£79½		£79½
Week's turnover	7,275 tons		9,425 tons	
TIN				
Cash ..	£797	£797½	£806	£807
Three months ..	£791	£792	£795½	£796
Settlement ..		£797½		£807
Week's turnover	945 tons		690 tons	
ZINC				
Current ½ month	£91½	£91½	£90½	£90½
Three months ..	£90	£90½	£89½	£90
Settlement ..		£91½		£90
Week's turnover	5,125 tons		4,550 tons	

London Metal and Ore Prices appear on page 21.

Mining Finance

The Lesson of R.B.H. and W. Deep

The recent failures of issues by Rhodesian Broken Hill and Western Deep are a measure of the difficulties that the industry must face in attempting to raise capital abroad. It is, of course, true that the South African gold industry in particular is self-financing to an extent that may not be generally realized. At the annual meeting of the Chamber of Mines, Dr. Busschau pointed to the fact that since the war about £530,000,000 of new capital had been found for gold mining in South Africa, of which about £370,000,000 had been "new" money and £160,000,000 had been appropriated from profits. However, in spite of the large amounts which are now ploughed back, it would be clearly impossible for the industry indefinitely to find sufficient capital from its own resources to insure continued progress at the post-war rate.

By a fortunate combination of circumstances the problem, though clearly of great importance, is not actually urgent at the moment. Speaking to General Mining shareholders, Sir George Albu made a point which is, in fact, applicable to the industry as a whole. He said that as a result of the exploration programmes and new mine development of the post-war years,

General Mining was on the one hand well placed for resources, and, on the other, was not faced with heavy commitments.

Nevertheless, if the industry is to develop as it should, a point will inevitably come when substantial outside finance will again be needed. If this finance is to be forthcoming, the work of rebuilding a healthy investment climate must begin very soon.

Meanwhile, the gold price question is still the one factor which, after politics, has the greatest power to influence the gold share market. The South African situation over the past few months has, of course, meant that the gold price has been out of the headlines, while preoccupation with the presidential election in the U.S. has, for the time being, made the dollar's strength no more than a minor talking point there. Nevertheless, the factors pointing to an eventual gold price increase, which were so widely discussed a few months ago, are still present, and indeed, have become even more apparent. Dr. Busschau, for example points out that, according to the latest reports, foreign short-term dollar holdings now exceed the United States gold stock. Admittedly, although this is something of a milestone, it means little more than that if every short-term holder of dollar balances

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suddenly decided to convert, the Treasury would be in difficulty. This is obviously a most unlikely eventuality.

However, the situation continues to deteriorate, and although the gold outflow from the U.S. has decelerated in recent months, it still persists. The rise of interest rates in Europe, too, may well aggravate the problem facing U.S. monetary authorities, who are already confronted with the decision whether to ease credit (and thus stimulate the outflow) or to maintain interest rates at their present level (and run the risk of stifling the dynamic of U.S. industry). Dr. Busschau's conclusion is that an eventual adjustment in the gold price is inevitable, and that when it is made it will add to the economic progress of the free world.

ATLAS COPCO OFFER FOR CRAELIUS

Atlas Copco A.B. of Stockholm has made an offer of 5 Atlas Copco shares and 30 kronor in cash for every issued share of Svenska Diamantberg Borning A.B. The offer is subject to confirmation by Atlas Copco shareholders and will become unconditional on receipt of acceptances in respect of 60 per cent of the capital of Svenska Diamantberg. Closing date is September 1. The boards of both companies recommend the offer.

Svenska Diamantberg is the parent company of the Craelius organization which specializes in diamond drilling for prospecting, soil testing and other purposes. Affiliated companies include Craelius Co. (London), S.A. Craelius (Paris) and companies in Germany, Italy, Kenya, Algiers and Morocco.

LONDON MARKET HIGHLIGHTS

A much happier atmosphere developed in African mining markets last week. Golds staged a brisk rally following some bullish Press comment at the weekend coupled with the absence of "Freedom Day" disturbances in South Africa. Coppers also moved ahead, sentiment being given a lift by the continued strong recovery in Brussels of Union Minière, the important Belgian Congo copper producer.

Technically, both sharemarket sections were ripe for a rally. They were both oversold and, with stock in short supply, prices were bound to respond sooner or later. But the main talking point was "Will the recovery last?"

Certainly the improvement in Kaffirs was backed by a broadening of interest. After the first bout of speculative buying many small investment orders were received and bargains marked climbed from under 200 a day to above 500. Oddly enough, the movement was almost entirely London inspired. Johannesburg made little attempt to join in, the lack of interest there being partly explained by the awkwardness of arbitrage dealings caused by the fact that many prices were quoted "ex-dividend" here and still "cum-dividend" at the Cape.

It may well be that the recovery in Golds will continue, but of course any further disturbances in South Africa would quickly put prices into reverse again. The rally cannot be expected to carry on at last week's pace, though; it was noticeable that following the fresh advance on Wednesday, after news of prospective lifting of South Africa's State of Emergency, closing prices were often below the best.

Even so, some substantial gains had been established during the all-round advance of the three days. Free State Geduld had

moved up 11s. 3d. to 122s. 6d., and "Ofsits" 5s. to 75s. 6d., while President Brand had risen from 53s. to 61s. 6d. In the West Rand group, West Driefontein had put on 5s. to 82s. 6d. and the embryo Eastern Rand mine, Bracken, had risen from 21s. 10½d. to 24s. Outstanding in Finance stocks were Gold Fields with 6s. up at 64s.

Coppers followed a similar pattern, but the volume of business was smaller. A more optimistic view of the Congo situation was taken following news that the Rockefeller interests were increasing their investment in that country. "Tanks", an important holder of Union Minière, jumped from 35s. 6d. to 40s. at one time while Chartered strode ahead with a rise of 7s. 3d. to 79s. Nchanga showed a good rise at 58s. 1½d., the shares being additionally helped by high hopes surrounding the final dividend which is due to be declared next week.

Tin shares pursued their steady upwards course for most of the time, being helped by the satisfactory settlement of a new International Tin Agreement. But on Wednesday the share market ran into some profit-taking. This centred on recent favourites such as Ayer Hitam, Sungai Besi and Trough. Ayer Hitam after climbing 13s. 9d. to a new peak of 131s. 3d., promptly reacted to 125s. Sungai Besi came back to 33s. 6d. from 34s. 9d. and Trough retreated to 43s. 3d. after touching 45s. 6d.

Other Tins were firm enough, Beralt rising to 32s. 3d. from 30s. 9d. Among the Nigerians the tin and columbite producing Gold and Base gained 4½d. to 2s. 3d. following news of a sharp recovery in 1959 profits and a resumption of dividends; even better results should be in store for the company this year.

NEW NICKEL FIND IN MANITOBA?

A three-year exploratory programme on a twenty-mile belt in the Mystery-Moak Lake nickel region of Manitoba has resulted in what may prove to be an important new nickel discovery. A drill bored to test a large anomalous area brought up a core with a 50-foot mineralized section, of which 35 feet averaged about 1.2 per cent nickel. Also significant was the fact that the nickel-bearing minerals intersected were pentlandite and violarite, these being the host minerals at Inco's Thompson mine nearby.

The exploration programme has been conducted by Mr. J. H. Hirshhorn, who was an important figure in the discovery of the Elliot Lake uranium mines. As in that case, Rio Tinto Mining Company of Canada are interested in the latest discovery. Their interest amounts to fifteen per cent, the other 85 per cent being attributable equally to National Malartic Gold Mines and Consolidated Marbenor Mines.

MORE CANADIAN URANIUM STREAMLINING

Another important development in the rationalization of the Canadian uranium mining industry is soon to take place. This will be the amalgamation of Preston East Dome, a company with substantial holdings in the Rio Tinto Blind River mines, with Stanleigh Uranium Mining Corp. The amalgamation is subject to approval by shareholders and bondholders and certain other conditions.

The merger will involve the closure of the Stanleigh mine and mill. Deliveries under Stanleigh's government contract will be made by Rio Algom. Rio Algom is the

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new company to be formed by a merger of Milliken Lake, Pronto, Northspan and Algom, the four Rio Tinto Blind River producers. Rio Algom was expected to come into existence at the end of June.

The company to be formed by the Stanleigh-Preston East Dome merger is to be called Preston Mines. It will have an authorized capital of 5,000,000 4 per cent preference shares of 50 c. each, and 10,000,000 common shares of no par value. Each Stanleigh share will be converted into one preference share of Preston Mines, and each Preston East Dome share into one common share of the new company. For a period of 90 days after the merger becomes effective, Rio Tinto of Canada will purchase all preference shares offered to it at par.

NEW COPPERBELT SHAFT RECORD

A new Copperbelt shaft sinking record of 415 feet in 30 days has been set by the Cementation Company, contractors for the No. 14 shaft on the £14,000,000 extension project at Mufulira West.

This shaft will eventually reach a depth of 2,950 feet. It is planned to step up the rate of sinking to 500 feet per month, and if this is achieved, the shaft should reach its final depth towards the end of August.

GEOFFRIES EXPLORATION DIS-APPOINTMENT

In his speech to shareholders, Sir George Albu, chairman of General Exploration O.F.S., said that drilling spread over about 75,000 morgen in the O.F.S. had met with negative results. Geoffries has a twenty-five per cent interest in this programme with General Mining and Finance. Last year Geoffries spent some £10,000 on the project.

Like most S.A. finance houses, the market value of Geoffries shares fell by about one-third between Dec. 31 last and the middle of this year. In Geoffries' case, the actual values were: year-end £833,195; June 14, £561,070. During the 1959 financial year, on the other hand, the book value of investments rose by more than £81,000 as a result of Geoffries acquisition of further Loraine shares at the beginning of 1959.

Sir George Albu's speech appears on p. 29.

"SATISFACTORY PROGRESS" AT ZANDPAN

At Tuesday's annual meeting of Zandpan, the new Anglo-Transvaal group mine in the Klerksdorp area, the chairman said that satisfactory progress was being maintained in the sinking of the No. 1 shaft.

On June 25, the shaft had reached a depth of 4,274 feet. This leaves approximately 2,530 feet to sink to reach the Vaal Reef horizon. At the present rate of progress, the chairman said, the Vaal Reef intersection should be made towards the end of the first quarter of 1961.

DE BEERS TO ACQUIRE S.W.A. "DIAMOND AREA NO. 2"

It has been provisionally agreed that Diamond Mining and Utility will cede to De Beers the right to prospect and mine diamonds in most of Diamond Area No. 2, a coastal strip of more than 8,000 square miles between Walvis Bay and Luderitz, South West Africa. Diamond Mining and Utility will retain about one-seventh of the

area, and the finance needed to exploit this will be provided by £150,000 loan facilities to be made available by De Beers. De Beers will also pay to Diamond Mining 20 per cent of any net profit made by De Beers from working the ceded area.

The agreement is subject to ratification by Diamond Mining shareholders at a meeting in Luderitz next week.

Mountain Copper Pays More.—Mountain Copper Company is increasing its dividend from 9d. in 1958 to 1s. for the financial year ended last December. This was made possible by an increase in net profits from £75,975 to £140,296. £142,857 has been placed to contingencies reserve, and the carry-forward has been reduced from £273,838 to £142,857. Meeting, July 28.

Company News

The Isotope Information Bureau, located on the ground floor of the London Office of the United Kingdom Atomic Energy Authority, has been set up to provide a convenient central point of enquiry for obtaining information on radioisotopes—their production and uses.

*

Leonard Cohen, Ltd., announce that their new address, as from June 20 is 25 Upper Brook Street, London, W.I. Telephone Hyde Park 4010. Cable Address and Telex No. are unchanged.

*

Union Carbide have announced that their plant facilities at Brownsville, Texas, U.S.A. are to be altered and revised for chemicals production. Construction work is to begin immediately and should be completed early in 1961.

South Wales Mining Disaster

Forty-five men and boys lost their lives on Tuesday, following a methane ignition in Six Bells Colliery, Monmouthshire. This disaster was the worst for 35 years in South Wales.

Six rescue teams were at the scene very soon after the explosion but, owing to the size of roof falls, were unable to get to the trapped miners, who were thought to be working near to the seat of the explosion. As normally experienced after an explosion of this magnitude, the ventilation circuit was badly affected and the presence of after-damp made the rescue work very difficult.

More than 600 miners were working underground at the time of the explosion and, except for those trapped inbye, were hoisted safely to the pit head. The colliery is fairly near to Cardiff where the Annual Summer Meeting of the Institution of Mining Engineers is currently being held.

LONDON METAL AND ORE PRICES. JUNE 30, 1960

METAL PRICES

Aluminium, 99.5% £186 per ton	
Antimony—	
English (99%) delivered, 10 cwt. and over £190 per ton	
Arsenic, £400 per ton	
Bismuth (min. 1 ton lots) 16s. lb. nom.	
Cadmium 10s. 6d. lb.	
Cerium (99%) net, £15 0s. lb. delivered U.K.	
Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.	
Cobalt, 12s. lb.	
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram	
Gold, 250s. Id.	
Iridium, £23/£26½ oz. nom.	
Lanthanum (98%/99%) 15s. per gram.	
Magnesium, 2s. 2d./2s. 3d. lb.	
Manganese Metal (96%/98%) £275/£28:	
Nickel, 99.5% (home trade) £600 per ton	
Osmium, £22/£24 oz. nom.	
Osmiridium, nom.	
Palladium, Imported, £8. 12s. 6d.	
Platinum U.K. and Empire Refined £30 5s.	
Imported £284/£284	
Quicksilver, £70/£70½ ex-warehouse	
Rhodium, £45/£48 oz.	
Ruthenium, £16/£18 oz. nom.	
Selenium, 50s. 0d. per lb.	
Silver, 79d. f. oz. spot and 79d. f'd	
Tellurium, 25s. 0d. lb.	

ORES AND OXIDES

Antimony Ore (60%) basis	20s. 0d./21s. 0d. per unit c.i.f.
Beryl (min. 10 per cent BeO)	210s./220s. per l. ton unit BeO
Bismuth	65% 8s. 6d. lb. c.i.f.
	18/20% ls. 3d. lb.
Chrome Ore—	
Rhodesian Metallurgical (semifriable 48%) (Ratio 3 : 1)	£15 5s. 0d. per ton c.i.f.
Hard Lumpy 45%	(Ratio 3 : 1) £15 10s. 0d. per ton c.i.f.
Refractory 40%	£11 0s. 0d. per ton c.i.f.
Smalls 44%	(Ratio 3 : 1) £13 5s. 0d. per ton c.i.f.
Baluchistan 48%	(Ratio 3 : 1) £11 15s. 0d. per ton c.i.f.
Columbite, Nigerian quality, basis 70% combined pentoxides (Ratio 10 : 1)	Nb ₂ O ₅ : Ta ₂ O ₅ 175s./180s. per l. ton unit c.i.f.
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF ₂)	156s. 0d. ex. works
Lithium Ore—	
Petaite min. 32% Li ₂ O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Lepidolite min. 34% Li ₂ O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Amblygonite basis 7% Li ₂ O	75s./85s. per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£23 0s. d/d
Manganese Ore Indian—	
Europe (46%~48%) basis 67s. 6d. freight	73d./75d. c.i.f. nom.
Manganese Ore (43%~45%)	69d./71d. c.i.f. nom.
Manganese Ore (38%~40%)	8s. 11d. per lb. (f.o.b.)
Molybdenite (85%) basis	
Titanium Ore—	
Rutile 95/97% TiO ₂ (prompt delivery)	£28 0s. Od. per ton c.i.f. Aust'n.
Cassiterite 50/52% TiO ₂	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	156s. d./163s. d. per unit c.i.f.
Vanadium	
Fused oxide 95% V ₂ O ₅	8s./8s. 11d. per lb. V ₂ O ₅ c.i.f.
Zircon Sand (Australian) 65-66% ZrO ₂	£16/£16 10s. ton c.i.f.

Transvaal and Orange Free State Chamber of Mines

MINING'S GREAT CONTRIBUTION TO UNION

DOCTOR W. J. BUSSCHAU'S ADDRESS TO MEMBERS

Gentlemen,

This, the 70th annual general meeting of the Chamber of Mines, is being held in the golden jubilee year of the Union of South Africa. It is appropriate, therefore, to comment not only on the affairs of the mining industry in the last twelve months, but also on its achievements in the past 50 years.

The period has been one of great economic progress, and it is gratifying to record that the mining companies forming the Chamber have played their full part. Viewed dynamically, the rate of growth of the products of our members, in value and in volume, has increased at a rate greater than the growth of the population in sections and in total.

At the 20th annual general meeting in February, 1910, the then president, Mr. J. W. S. Langerman said: "In this great industry, the Union Government will find itself possessed of an asset that will prove of incalculable value in forming a structure upon which other industries can be built up that will survive the time when the predominance of mining as the mainstay of the country is on the wane."

Before and since 1910, the mining industry has made a full contribution to the establishment and growth of the economy of the Union. But despite the very welcome expansion of other sectors of the country's economy, the industry's predominance as the mainstay of the country is not on the wane. Apart from its internal generation of primary income, it provides the most important stimulus to secondary and tertiary industries. It contributes almost half the income from exports.

The possession of an export article, particularly one with the unique attributes of gold, which all the world always wants, is of great advantage to a young country. Gold, as the final means of settling international indebtedness can enter through doors which import controls close against other commodities. And hence, from the establishment of Union, South Africa could pay, without undue difficulty, for the capital goods it urgently needed to expand its total national production.

The exports of South African produce in 1910 totalled £52,000,000 of which gold accounted for £32,000,000 and the products of diamond and other mining for £11,000,000. Agriculture provided the balance of £9,000,000.

Today, the gold mining industry supports a large superstructure in which, stabilized and shielded by gold, other industries have been able to develop until they not only supply a large proportion of the needs of our own increased population, but are also able to export. In 1959, South Africa's exports totalled £632,000,000 of which the products of the gold mining industry, including uranium oxide, accounted for £292,000,000. Diamonds and other mining contributed £73,000,000. Manufactures, which were in their infancy in

1910, last year exported goods worth £96,000,000. Exports of raw agricultural produce amounted to £107,000,000 and the manufacturers of agricultural products, to £64,000,000.

Key Industry

An analysis of the progress of the various sectors of the economy over the past 50 years shows that gold mining dominated the scene up to the outbreak of World War II. Then as part of its war effort, it "marked time" in its expansion programme. Agriculture and manufacturing industry, stimulated by shortages and increased prices, particu-

1910 to 1932, £36,000,000; from 1933 to 1939, nearly £63,000,000, and during the war years, restrained by its war effort, only £5,000,000. A rough assessment shows that since 1946, the amount raised by gold and uranium companies is in the order of £370,000,000. This last sum is more than one and a half times the total amount, in terms of money, of capital raised in the industry's previous existence of over half a century. It was achieved in the difficult post-war period, and more than half of this money came from external sources.

In all, the mining industry has raised £610,000,000 in "new money" and has appropriated out of profits an additional £235,000,000 for capital purposes.

We have been greatly dependent on overseas capital and the maintenance of our activities depends on the continuance of a strong flow of capital from outside.

In 1910, fears were expressed in some quarters, as they are today, that the industry's future might be short-lived. The gold production for the 50 years 1910 to 1959, represents nine-tenths of the physical production since 1886 and realized a sum of nearly £4,400,000,000. Fifty years ago gold production amounted to about 7,500,000 ounces of gold. Last year, production was more than 20,000,000 ounces and on the basis of the figures for the first five months of 1960, this year's total should reach 21,000,000 ounces, with a value of over £260,000,000. The figures of capital raised and of physical production are clear proof that today the industry is larger and more active than it has ever been before, while it contains a considerable growth potential.

In terms of the unit of account, the cost of producing an ounce of gold has increased considerably within our industry. In 1910, the working costs per ounce of gold were approximately 52/- and in 1959 the comparable figure was about 203/-. Over the period there have been many monetary changes, and it is perhaps more realistic to express these figures in terms of pennyweights. In 1910, the working costs per ounce were equivalent, at the then price of gold, to 12.2 dwt. In 1959, at the current price of gold, the comparable statistic is 16.3 dwt. per ounce.

What is significant is that the industry does, despite unfavourable changes in the cost/price relationship, now treat profitably ores of a grade which fifty years ago were largely not worked. The average grade on the old Witwatersrand in 1910 was 6.8 dwt per ton as compared with 3.6 dwt per ton for the same geographical area in 1959. Behind these figures lies a story of considerable technical progress.

Uranium Production

The production of uranium oxide from the inception in 1952 of this



Dr. W. J. Busschau

larly export prices, developed rapidly, especially immediately after the war.

The revaluation of sterling in 1949 enabled gold mining again to advance and under its stimulus there was a general increase in the tempo of expansion. Later, when other enterprise began to feel the draught of a general decline in world prices, the gold mining industry made a double impact on a flagging economy. The new mines that had been developing began to produce gold in substantial quantities, while the output of the new uranium industry grew rapidly. These two new sources together gave a most welcome and timely addition to the supply of foreign exchange.

The pattern of development of the gold mining industry and the stimulus it has given to the Union's economy is further illustrated by the figures of capital funds raised by the industry in the past 50 years.

From the establishment of the gold mining industry on the Witwatersrand to the end of 1909, the industry raised in capital and loans £136,000,000; from

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branch of the industry to December 31, 1959, was 56,200,000 lb. which realized £233,200,000.

Members of the Chamber produced 12,526,000 lb. in 1959, and all the producers fulfilled their contracts. The situation that will arise at the end of the present contracts which expire from 1964 to 1966, is still difficult to predict, but much valuable information has been collected and a closer liaison with the potential market overseas has been developed.

In February this year, representatives of the Union's Atomic Energy Board and of the Chamber, had lengthy discussions with representatives of the Combined Development Agency, the joint purchasing agency of the Atomic Energy Commission of the United States Government and the Atomic Energy Authority of the United Kingdom, who came to this country for consultations which are held periodically on the sale of our uranium to the agency. These discussions resulted in all parties to the contracts gaining a clearer appreciation and understanding of the problems connected with the production and disposal of uranium products. The present contracts remain unchanged, but the Atomic Energy Board and the Combined Development Agency have agreed further to study the position and further discussions may be held later.

The Atomic Energy Board has inaugurated a programme of research and development covering a wide range of subjects, including methods of extracting uranium oxide, the further processing of this oxide to the nuclear fuel stage, nuclear power in South Africa, and radioisotopes and radiation. Fundamental research in fields important to the execution of the programme will also be fostered.

The preliminary estimated requirements to carry out the programme for the first five years envisage an expenditure of £4,000,000—that is £800,000 a year—and the uranium producers have undertaken to contribute £2,000,000 of this total. The industry will further assist with the services of experienced and highly qualified scientists on the research team under the direction of Dr. A. J. A. Roux.

Coal Production

The total tonnage of coal sold by collieries of the Transvaal and Orange Free State in the years 1910 to 1959 was 712,500,000 tons valued at pit-head at £248,400,000. While the sales output of our colliery members for 1959 was 30,171,327 tons, as against 30,251,987 tons in the previous year, the value of sales was £17,109,032 compared with £15,994,130 owing to the increased price granted by the Price Controller in November, 1958.

Coal sales in the Union were on a lower scale in 1959 than in the preceding year owing to a decline in the internal demand which indicated a slackening in the country's industrial tempo. The decline in sales, particularly in the early part of the year, resulted in part, however, from the steps taken by consumers to reduce their stocks. This became possible through the more regular deliveries by the railways which improvement resulted in the discontinuance of the large, subsidized road transport scheme at the end of 1959. As the current year has progressed there has been an encouraging improvement in the internal demand.

OPERATING RESULTS IN 1959

Fields (Mines Members of the Chamber)	Production		Profits		Dividends declared £ millions
	Gold Ounces (Troy) (oz. millions)	Uranium Oxide lb. (Avoir- dupois) (lb. millions)	Working Profit from Gold £ millions	Profit from Sale of Uranium Oxide & Acid £ millions	
East Rand	5.11	.82	16.39	2.30	7.92
Central Rand	2.13	—	1.24	—	1.00
West Rand	.60	3.99	1.03	5.10	2.57
Far West Rand	3.18	.94	19.71	2.63	8.00
Klerksdorp	3.03	4.14	16.06	11.51	10.01
Orange Free State	5.58	2.64	31.65	7.29	16.68
Totals	19.63	12.53	86.08	28.83	46.18

PERCENTAGES

	%	%	%	%	%
East Rand	26	7	19	8	17
Central Rand	11	—	1	—	2
West Rand	3	31	1	18	6
Far West Rand	16	8	23	9	17
Klerksdorp	16	33	19	40	22
Orange Free State	28	21	37	25	36
Totals	100	100	100	100	100

The table shows clearly the growth of the new fields as contributors of output and dividends, but one must not forget that the mines producing before World War I and still producing are still important in regard to output and hence in regard to the volume of employment available.

Because of conditions of oversupply generally in Europe and America, the prospects of South Africa's regaining a share of the export trade remained discouraging throughout the year, despite sales missions to South America, the Middle East and Pakistan. From the beginning of this year, however, India imposed an embargo on the export of its coal and, as a consequence, Ceylon and Burma have placed substantial orders for South African coal. The industry is sparing no effort to foster and extend these outside markets.

Research and Technical Progress

The report of the Gold Producers' Committee gives some information regarding current research projects being carried out by the Chamber in many fields and as the mining Groups themselves conduct extensive research, the total of research by the mining industry as a whole is formidable in extent and in cost.

Much has been written and much could be said this afternoon on the technical achievements of the mining industry. Rather than dilate on this subject, I could quote many favourable remarks made by distinguished mining engineers who have visited us in recent years. May I refer to a comment by one of the most recent visitors, Dr. Donald H. McLaughlin, president of the Homestake Mining Company, a past president of the American Mining Congress and recognized as one of the leading geologists and mining engineers in the United States.

In a speech in Cape Town in March this year, referring to the gold production of the free world and to the post-war contribution of South Africa, Dr. McLaughlin said,

"In scientific and technical skill and in financial courage and wisdom, there have been few episodes in mining history to match these achievements of the

South African gold industry, and it is to be hoped that economists and bankers, as well as geologists and engineers, appreciate the importance of the contribution that has been made to the world's welfare."

A most important aspect of the industry's efficiency is the safety of the men in the mines.

The whole industry was shocked at the news of the Coalbrook disaster and at the appalling loss of the lives of mining men. I should like to record our deepest sympathy with the relatives of the victims and with the management of the mine. This was a collapse of ground on an unprecedented scale and constituted a major disaster in mining history. We hope that, in the interests of safety in the mines, the official enquiries will provide an explanation of the causes and a guide for the future.

Year by year as the mining industry has expanded, more and more men have been employed, particularly underground. At the same time, workings have increased in depth. Sight, too, must certainly not be lost of the fact that the vast majority of our underground workers are still primitive people; unskilled workers with little or no previous acquaintance with modern industry. Yet constant research into safer mining methods and the unremitting efforts of the Prevention of Accidents Committee of the Chamber of Mines have resulted in a steady diminution of the fatal accident rate. In 1913, the first year of the operation of the Prevention of Accidents Committee, the fatal accident rate in gold mines was 3.81 per 1,000 per annum. In 1959, this was 1.47 per 1,000 per annum. In our coal mines last year, it was 1.09 per 1,000 per annum.

Mine accidents, particularly fatal ones, attract the attention of the public and the press. But it must be remembered that work in our mines is as safe as it is in any comparable undertaking in the world — incidentally with considerably less loss of life than in road accidents in the Union.

Human Relations

The safety and health of all our employees while at work are a primary concern, but these are only part of the pattern of human relations developed in the mining industry in the past 50 years.

It was recently my pleasant duty to present Jubilee Awards, symbolic of the close human ties within our industry, to 120 people—19 of them non-Europeans—who were in the services of the industry in 1910, the year of Union, and who still serve it. These "jubilee members" comprise a wide cross-section of the industry.

The comprehensive care given our Native labourers during their intermittent spells on the mines—their housing, feeding, hospital and medical services and their recreational facilities, are well known in this country and in the many parts of Africa from which these workers come. If we are to judge by certain adverse comments, they are barely known or deliberately ignored or misrepresented in Europe and America.

Many schemes have been evolved for the social welfare of all our employees. Before Union, and long before it was made compulsory by law, the industry pioneered insurance of employees against accidents. In 1934, the Chamber discussed with representatives of our European employees, who are the permanently employed section of the industry, the establishment of a contributory pension fund, but, owing to a lack of unanimity among the employees, a provident fund to which only the mining companies contribute, was established. In the immediate post-war years, pension funds to which both employers and employees contribute were established for both officials and day-pay employees. The benefits of these funds are additional to those of the provident fund, and, indeed, are additional to payments under various Acts of Parliament to employees disabled in the course of their work in the industry.

The assets of the provident and pension funds today amount to nearly £60,000,000, and it is surprising to note that this considerable essay in social welfare by private enterprise was ignored in the debate in Parliament last month on the subject of pensions for miners under the Mines Vote.

Employer/employee relationships have evolved to a high degree through the basic concept of consultation at all levels. In this regard, I should like to compliment the representatives of the officials' associations and of the trade unions for the responsible manner in which their requests are made and debated, and for their recognition of the key position occupied by the industry in the economy of the country.

I would especially like to pay a tribute to all the employees of the industry for the manner in which they have carried out their duties in the past year.

The spirit of co-operation in the mining industry is highly developed and I, personally, have found this particularly gratifying in the helpful advice and assistance I have had from my colleagues on the Executive and Gold Producers' Committees, particularly from the two vice-Presidents. I would like to thank all of them, as well as the members of the Technical Advisory Committee and other valuable committees of the Chamber. I must also give special thanks to the officials of the Chamber and their staffs.

It was fitting that the industry, which

has played so large a part in the development of the Union, should make an appropriate contribution to the Festival of Union. The Chamber accordingly made large grants to the celebrations both in Johannesburg and Bloemfontein, and staged large and comprehensive exhibits of the mining industry's activities in the Chamber's permanent pavilions in both centres. In the Johannesburg pavilion, a magnificent display of the uses of gold through the ages included, by gracious permission, a selection of gold plate from the private and State collections of Her Majesty the Queen.

Industry is Reviewed

The gold mining industry has yet to reach full maturity. This may seem a paradox when great publicity is given to so-called "dying" mines. Yet in fact, the industry last year achieved a record output of over 20,000,000 ounces of which 98 per cent came from Chamber members. This was nearly 2½ million more ounces than in 1958. It was able to do this because of the increasing output of the new mines, those that have come into production since World War II. These mines provided some 52 per cent of the total output. Forward estimates of production of the industry as a whole indicate that, provided the older mines are not forced to close prematurely, the peak has yet to be reached.

The old mines, including those often referred to as "vulnerable mines", still account for a substantial part of the output and their premature closure would result in severe diminutions of output and employment. Great credit is due to their managements which through their unremitting efforts are able to continue to operate these mines.

Although for most purposes the industry is regarded as a coherent whole, we are, in fact, operating seven gold "fields". Starting in the east, we have the Kinross field; then in the East Rand which runs from Nigel to the western boundaries of E.R.P.M. Because there is at present only one mine in production in the Kinross area, its operating results in the table below have been included in those of the East Rand. Then from the west of E.R.P.M. to Durban Deep, there is the Central Rand. From East Champ d'Or to Randfontein constitutes the West Rand; and from Venterspost to Doornfontein, the Far West Rand, or "West Wits Line". Then we have the Klersdorp and the Orange Free State fields.

It is interesting to examine the output and working profits in respect of both gold and uranium and the dividends paid to shareholders in mining companies operating in these gold fields in 1959, as shown in the table below. Uranium producers are situated in five of the "fields", Kinross and the Central Rand being the exceptions.

This analysis of the operations of the industry in the various fields emphasizes how important it is for the industry, and for South Africa, constantly to explore and develop new mining ground to replace that consumed by mines as they exhaust the ore within their boundaries.

Authority's Responsibility

While records of output are gratifying they also mean that mining ground is being used up at a rate greater than ever before. Further expansion of output and

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later, the maintenance of that output, will depend on the emergence of new producers and that the authorities concerned should be fully aware that they are failing in their responsibilities unless they create a favourable setting for exploration and exploitation.

The capital cost of exploration is considerable and even when successfully completed, the risk factor in opening up and exploiting a new venture remains high. Then there is even greater capital expenditure to be faced in bringing a new mine to the production stage. Satisfaction at the record aggregate profits of the industry last year, most of it coming from the new producers, must be tempered by a realization of the tremendous capital expenditure of the industry in the post-war period. Despite the industry's having raised an amount in the order of £370,000,000 in "new money" in this period, some £160,000,000 had to be appropriated out of profits for capital purposes. The investor, therefore, is deserving of every consideration and this he is certainly not receiving from the State, so long as the system of discriminatory taxation persists. In the long-term view, it is clearly in the interests of the State, too, that capital should be found for the establishment of new mines. Much of this capital, I would repeat, will have to be found from outside. If it is not forthcoming, the rate of the country's future economic growth will be considerably retarded.

Over the years, repeated representations have been made to the Government of the day on the subject of discriminatory taxation of the gold mines and although slight concessions have been made from time to time, the basic "principle", that the State is entitled to tax the profits of gold mining companies at a rate considerably higher than that imposed on other companies, has remained unchanged. This discriminatory taxation of the gold mining industry remains unjustifiable and unwise, not only from the viewpoint of the investor but also from that of the State.

Further Representations

Last year, the industry prepared a carefully considered memorandum on the subject in all its aspects and presented it to the Minister of Finance.

It was pointed out that the gold mining industry had contributed disproportionately to the State's revenue for half a century and that it had also been responsible, directly and indirectly, for the establishment of a large "permanent" secondary industry. As the gold mining industry has a considerable future potential, its further contributions towards the expansion and consolidation of this secondary industry should be such that the continued discriminatory taxation on the so-called "wasting asset" principle is both unnecessary and unjustified.

On the subject of the taxation of profits derived from uranium production, it was emphasized that similar discrimination was also most unfair, particularly as, after the expiry of the existing contracts with the Combined Development Agency, uranium producers would be faced with keen competition for sales on the open world market and their competitors are not subject to the same tax burdens.

The Government was consequently urged to take steps to bring the overall

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rate of taxation imposed on the gold mining industry into line with that applied to other industries, so that in due course any discrimination between tax paying companies would disappear. It was further suggested that this could be done gradually and in such a manner as still to result in annually increasing amounts accruing to the State for several years.

Our representations were not recognized in the Budget this year. We trust that the Government will give full consideration to the views expressed before framing the next Budget.

The Gold Price

In the recent years of Union, the profitability of gold mining has been lessened by the increase in working costs without a corresponding increase in the price of our product. My predecessors have dealt adequately and at length with the arguments for a revaluation of gold, and it is not necessary to repeat them today, except to say that the validity of the arguments has become more widely recognized while the march of events has continued to add proof of the desirability of such a revaluation.

As has previously been pointed out, the attitude of the United States of America is of central importance in relation to a decision to make an all-round revaluation. The determination of that country to leave the gold value of the dollar unchanged from where it was fixed over a quarter of a century ago is now clearly resulting in a weakening of their net reserve position to the extent that, according to the latest reports, foreign short-term dollar holdings now exceed the United States' gold stock. This is a condition considerably different to that pertaining some years ago and responsible observers in the United States believe that effective action has not yet been taken, nor is it likely to be taken, to prevent a devaluation of the United States' dollar which would result in a general revaluation. For the moment, we are told that preoccupation with political matters such as the forthcoming presidential election and the increase in tension following the failure "at the summit" are likely to delay the monetary adjustment.

In the meantime, the United States monetary authorities would appear to be faced with a dilemma. Private enterprise is urging an easing of credit to avoid a recession while prudence warns that a lowering of interest rates might well accelerate a loss of gold through holders converting their dollars into other currencies. The dilemma was recently explained by Dr. Arthur F. Burns, former chief economic adviser to the American President, who said,

"For many years we were able to conduct our economic affairs without regard to stocks of gold, without regard of foreign holdings of liquid dollar assets, without regard to the level of prices here relative to the level abroad, without regard to the level of interest rates here relative to the level in foreign money markets. This freedom we no longer have."

With our friends, the gold producers of the main western countries, and with the many bankers and business men in these countries who wish to restore a workable international monetary system, we of the mining industry expect that the adjustment is still inevitable, and that when it is made, it will add to the

economic progress and so contribute to the defence of the free world.

State of Emergency

When disturbances in some urban areas led to the declaration of a state of emergency on March 30, 1960, it was necessary for the mining industry to take stock of its own position, in relation to the supply of Native labour and to security. The Natives who work in the industry come from rural sources and the Native labour force as a whole is largely not subject to the same influences, nor does it encounter the same problems of daily living as do urban Natives working in other industries. Nevertheless, the disturbed times must also have caused anxiety to our Natives and I am glad to record that I know of no incident on any mine, a member of the Chamber, which could be described as forming part of the pattern of the recent unrest.

I would, therefore, like to thank the Natives working in the industry for getting on with the job, especially as the mining industry was not affected at all by the illegal strike described as a "day of mourning".

Against this background it is most pleasing to be able to record that on March 23, 1960, the gold mining members of the Chamber achieved an all-time record, having no less than 389,970 non-Europeans in employment at that date. This figure indicates that the industry continues to act as a magnet, drawing labour not only from the Union, but also from many other parts of Africa. We believe that the figure also underlines the confidence the Natives have in the industry and the way in which it handles its labour force.

Responsibility of Chamber

The members of this Chamber include not only representatives of producing mining companies, but also of the financial houses, which provide management and financial services to the mines, as well as administering manufacturing companies. In relation to the problems of the multi-racial community, the Chamber, while appreciative of the fact that mining operations have not been affected by the recent Native unrest, cannot, in view of its responsibility to shareholders in particular and to the country as a whole, be blind to the causes and consequences of the unrest. We are naturally much concerned at the fall in capital values of mining shares and at how extremely difficult it has become to raise new capital for exploration and for the development of new mines.

The mining houses have a considerable stake in the finance and management of a substantial part of manufacturing industry, and in the mining industry itself there are many experts who are well versed in the administration of Natives, including the work of departments dealing directly with Natives and with police work. The Chamber is, therefore, knowledgeable—and has had some 70 years experience—regarding the problems of Natives in both rural and urban settings, and it is in a better position to make practical suggestions than many in this country whose knowledge is academic and theoretical or has been gathered from dealing with these people at arm's length.

In these circumstances, the Chamber willingly co-operated with other national employer organizations in studying the causes of the unrest and in drawing up practical and constructive suggestions for dealing with the urban Native problem. These suggestions were submitted in a memorandum to the Prime Minister. While we have been pleased to note that various statements made by Government show that some of the suggestions have found favour, we, together with other organizations, still desire that in its continuing study of the problem, the Government should give further attention to all our suggestions.

We shall be glad in the future, as in the past, to lend the assistance of our knowledge and experience to genuine attempts to find solutions.

My remarks must not be taken to imply intervention in the policies of political parties. In 1960, as they did in 1910, the vast majority of South African citizens share the common aim of providing security for everyone while bringing to all the peoples of the Union the increased benefits, tangible and intangible, represented by the pattern of living known vaguely as "Western Civilization". The attainment of this object is not easy, but while there may be much disagreement as to the methods to be followed, there is little lack of concord in relation to the aim. It is clear, however, that whatever the methods which prove effective, the process of civilized progress with security can best continue in an atmosphere of economic expansion.

We in the mining industry know that we have made a substantial contribution through our economic activity in the first 50 years of Union, and we hope to make our full contribution in the years ahead. We recognize that recent events, within and without the Union, show that the problems are more difficult than they might previously have appeared, but we hope and believe that they can and will be solved through co-operation and goodwill within this country and in relation to other countries.

Given timely and effective action to deal with these problems, there is no reason to doubt that the mining industry could give an even more impressive performance in the future than it did in the past.

ANNUAL REVIEW, 1960

On page 28 of *The Mining Journal Annual Review, 1960*, it was stated that Australian production of rutile fell to an estimated 79 tons in 1959 from the previous year's figure of 83 tons. The correct figures are respectively 79,000 and 83,000 tons.

On page 29 Volkswagen's annual consumption of magnesium is given as about 1,300 tons. It is, in fact, 13,000 tons.

In the article on Coal Preparation, with reference to the preparation of large coal, it is stated (page 131) that the three latest designs of separators to be introduced in Great Britain employ neither wheels nor drums. We have been advised, however, that the new Simon-Carves Three-Product Separator, which is in an advanced state of development at the company's works, does, in fact, employ an inclined wheel having two concentric sets of compartments for the evacuation of middlings and dirt.

THE CENTRAL MINING AND INVESTMENT CORPORATION LIMITED

ASPECTS OF PROBLEMS CONFRONTING GOVERNMENTS AND PEOPLES OF SOUTH AFRICA

SIR ARCHIBALD F. FORBES ON NEED FOR RESTORATION OF CONFIDENCE ABROAD

The 55th annual general meeting of The Central Mining and Investment Corporation Limited was held on June 27 in London.

Sir Archibald F. Forbes, G.B.E. (the chairman) presided and, in the course of his speech, said:—

The total assets at March 31, 1960—measured by the criteria of market values of quoted securities and Directors' valuation of unquoted holdings—amounted to £42,700,000. After deduction of current liabilities the net assets amounted to £28 million. I think it would interest Stockholders to have the following statistical summary of the nature and spread of these assets together with the income derived therefrom in the year just ended.

Major Importance of Investments in Africa

Because of the extent of our direct and indirect investment in Africa, the problems which currently confront the Governments and peoples of various countries in that continent are of great concern to the Corporation. This is particularly so in the Union of South Africa where our interests are greatest. I am sensible that comments from outside on the internal affairs of other countries—especially where delicate questions of Commonwealth and racial relations are involved—can be unwelcome and one is more than anxious to avoid saying anything which might aggravate an already difficult situation. Nevertheless I feel that I have a

duty to our stockholders to make some observations on those aspects of the South African situation which are of particular moment to external investors like ourselves.

Among outsiders with some knowledge of that country there would doubtless be a large, if not complete, measure of agreement about the great potentiality which exists for future development and that this can best be realised if conditions are such as to encourage the inflow both of capital and of skill. This inflow will only be maintained if there is confidence that industry and commerce can be carried on in a climate conducive to the fostering of enterprise. That in turn means an assurance of stable and responsible government which, while discharging the primary function of maintaining law and order, does not rest—or appear to rest—on the need to exercise oppressive measures.

The extent of development already carried out in South Africa is impressive and a tribute to the effort, courage and foresight of the European population, but it still could not have been achieved without the assistance of African labour. The standards of living and education of the African have risen in the process and should continue to rise both on grounds of social justice and to ensure the necessary conditions for the successful carrying out of further economic expansion.

This is at once desirable and, I would think, inevitable, for it is my view that, whatever may be the chronology of settlement there by the

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different peoples concerned, South Africa is now—and must remain—a multi-racial country.

In the nature of things further educational advancement cannot be other than a gradual process and the growth of the African to a real sense of political responsibility can only move in step with his educational advancement and economic progress.

Nevertheless the present policy of the Union Government—as interpreted in many overseas countries—gives the appearance of denying to the African elementary rights of human dignity and reasonable opportunity. It may be that this impression fails to recognise fully the social improvements already attained by the African. It may be, too, that it is based on some exaggeration about the extent of unrest on the part of the mass of the African population.

But whether ill-founded in some degree or not the impression created has led to a serious lack of confidence abroad which—unless removed—cannot do other than arrest or impede further investment and economic progress.

It is therefore earnestly to be hoped that the Union, which is uniquely placed among African countries by reason of its economic strength and large and highly organized European population, will succeed in finding a solution to the present problems which will be acceptable to opinion both within and outside its borders.

The recent incidents did not affect the operation of the gold mines. In the longer term, however, their continued success will, as with all other enterprise, rest upon the maintenance of political and social stability.

Gold Mining

Regarded as a single industry, gold mining remains the largest in South Africa and although there is continuing growth in other industry and trade, much of it depends on the prosperity of mining in general and gold mining in particular. It is of vital importance to the Union that whatever the state of world trade, the country is assured of a steady demand for gold which is readily exchangeable for foreign currencies of all kinds.

Voices are heard, from time to time, urging an increase in the price of gold, and the merits of the case are discussed with vigour by economists the world over. This much may be said, with safety, that there are few forms of economic activity that command, within reason, an unlimited market where the price is not subject to commercial competition even though the financial outcome to the operator may be considerably affected by Governmental action.

Last year, for the first time, South African gold production amounted to more than 20 million ounces and there is every prospect that at least 21 million ounces will be produced this year. These new records owe their attainment to the mines developed since 1946, at a cost estimated at nearly £500m. 60% of all production now comes from the far West Rand, the Klipdrift district and the Orange Free State compared with only 6% from these areas just 14 years ago.

This is indicative of what the discovery and development of the new fields have meant to the industry and the country of South Africa.

Holdings in Union of South Africa

	Proportion of net assets	Proportion of total investment income
i) Gold Mining and Mining Finance Companies		
Shares	39.9%	45.5%
Loans	4.0%	2.8%
ii) Other Mining Companies		
Shares	5.0%	6.2%
Loans	0.2%	0.1%
iii) Industrial Companies		
Shares	7.6%	9.0%
iv) Property		
Shares	0.4%	—
v) Short term Loans and Cash (less current liabilities)		
Shares	1.7%	4.4%
	<hr/>	<hr/>
	52.8%	68.0%

Other Holdings

i) Companies which derive a significant part of their revenue from mining interests in the Union of South Africa, Rhodesia and West Africa	13.6%	9.6%
ii) Other Companies predominantly concerned with mining and oil	8.0%	2.4%
iii) Industrial and other companies	6.1%	3.5%
iv) Gilt Edged Stocks, Loans and Cash (less current liabilities)	19.5%	16.5%
	<hr/>	<hr/>
	100.0%	100.0%

Uranium

The profits accruing to the gold mines in recent years from the production of uranium oxide, in most cases as a by-product, have been quite considerable. And here I may point a contrast with my earlier remarks about gold. Between 1963 and 1967 the existing contracts for the sale of uranium will expire and it is already evident that on their expiry it is likely that the "market" will become more subject to the ordinary economic law of supply and demand.

No one can forecast the extent of demand for uranium in a few years' time but it seems reasonably certain that it will not be sufficient to ensure margins of profit such as have been enjoyed up till now. The industry, meanwhile, is supporting a programme of research into additional uses for

uranium with the object of stimulating demand.

Increased Working Profit

The gold mining operations of the Group as a whole in the calendar year 1959 resulted in a working profit of £12,397,000, an increase of £2,144,000 over the previous year. The working profit on uranium increased by £800,000 to £4,096,000. Dividends declared amounted to £6,577,000 which was £586,000 greater than for 1958.

The book cost of all holdings (other than those shown under current assets) rose by £1,309,000 during the year while net current assets decreased by £836,000. This is in accord with the policy of progressively reducing the more immediately liquid assets (without prejudice to the security of the funds deposited by associated companies)

as opportunities for more permanent investment arise.

This is a matter upon which the attention of the Board and management continues to be concentrated.

Current Prospects

Stockholders would doubtless like some indication about prospects for the current year. So far as income from investments is concerned I should expect, in the absence of unforeseen circumstances, that this would again increase. As in the past it is difficult to forecast the outcome of share dealing operations.

Nevertheless I shall be disappointed if, having regard to the overall position of the Corporation we shall not be able to maintain the distribution on the Ordinary Stock.

The report and accounts were adopted.

GENERAL MINING AND FINANCE CORPORATION LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S SPEECH

The following is Sir George Albu's review covering the operations of the General Mining and Finance Corporation, Limited, during the year ended December 31, 1959:

In submitting this review of the Corporation's progress during 1959, I propose commenting upon economic conditions in the Union and the grave events since the close of the year which have set in train extremely serious financial repercussions, the end of which is not yet in sight.

The Corporation's profits continue to be derived almost entirely from gold and uranium mining operations in the Union, and it is, therefore, encouraging to note the further satisfactory progress recorded by that industry last year, the value of its output having risen to approximately £300,000,000, equivalent to about 60% of the country's total annual imports.

A marked improvement in the native labour supply and an expanding production on a number of the newer mines brought about an increase of the order of 7½% or more than 4,900,000 tons in ore milled which, coupled with a higher average recovery grade, led to an increase of nearly 2½ million ounces in gold output. The working profit of just under £115,000,000 was 16%, or approximately £15,800,000, higher than in 1958, thus illustrating the paramount importance of an adequate native labour force.

It is also worthy of note that, mainly because of the increased tonnage milled, the average cost per ton of ore milled declined for the first time in eleven years.

Despite a moderate increase in the quantity produced, sales of uranium oxide to the Combined Development Agency were limited in accordance with the revised arrangements concluded in the previous year. There was, therefore, little change in the contribution made by uranium to the fortunes of the industry, although the total value of sales exceeded £50,000,000 or about one-sixth of the industry's revenue. Practically all uranium produced is sold under contracts which terminate between Decem-

ber 1964 and December 1966. The producers are giving careful thought to the best means which can be adopted for the continuance of production after the existing contracts run out. South Africa is the only large by-product producer of uranium oxide in the world, and as such is extremely well placed to compete in future markets. The companies in this group which are substantially interested in the future of uranium are Buffelsfontein Gold Mining Company Limited, Stilfontein Gold Mining Company Limited and West Rand Consolidated Mines Limited.

During 1959 the Transvaal and Orange Free State Chamber of Mines, on behalf of all uranium-producing companies, agreed to participate with the Union Government and others in a programme of atomic research to be carried out under the direction of the Atomic Energy Board. The cost of this programme, presently estimated at £4,000,000 to be spent over five years, is being met by the Government and industries of the country, and the uranium producers have agreed to provide £400,000 per annum over this period.

For the Corporation the past year was a period of consolidation in which increased dividend revenue was derived from its substantial direct and indirect interests in some of the younger mines of the various gold fields. Consequently there was a further rise in net income which, after adding nearly £700,000 to revenue reserves, made it possible, for the first time in the Corporation's history, to distribute an amount of 7½ per share to ordinary shareholders. As a result of the additional share investments referred to in the Directors' report and the increase in dividend payments, the excess of current liabilities over current assets rose slightly over the year to £642,169 at December 31, 1959.

The loan facilities obtained some years ago from Anglo American Corporation of South Africa Limited expired last December, and as no drawings had been made against them for some time it was not thought necessary to seek a renewal.

Early in 1959 the office building at 80 Marshall Street was sold and the Corporation's staff moved into its new premises at No. 6 Hollard Street on June 19, 1959. This modern block of offices, which provides adequate accommodation for the entire staff, with room for some future expansion, has been largely financed by a long-term loan secured by a first mortgage bond over the property.

The encouraging picture of the Corporation's progress last year is reflected particularly in the growth of the market value of its portfolio of quoted investments, which increased by some 35% to over £30,000,000 at the end of the year. The subsequent decline in share values, which has more than wiped out this improvement prompts me, therefore, to take stock of the present position. Although fluctuations in Stock Exchange values are to be expected from time to time anywhere in the world, with changes in financial conditions and in the fortunes of individual companies, the recent alarming decline through other causes in the values of South African securities quoted on the Stock Exchanges in Johannesburg and London, has considerably disturbed those responsible for the administration of mining, industrial and commercial enterprises. We are disturbed, not only because of the substantial paper and, in many cases, realized losses suffered by local and overseas investors, but also because of the resulting serious loss of confidence in this country as a safe and profitable field for investment. If the present situation continues, the raising of funds for the further development of existing undertakings and for the promotion of new ventures will become even more difficult than it is at present, and the burden on local capital resources may well reach a stage where the finance available in this country will be completely inadequate.

Fortunately for the Corporation, these problems present themselves at a time when its commitments are relatively light and when it is beginning to reap the fruits of the activities of the last decade during which it has been the policy to extend and diversify its portfolio. This has been achieved by amalgamations with other groups, by actual exploration of potential mining areas, alone or with others, and by purchase of shareholdings in companies with growth possibilities. When this

policy was initiated, the Corporation's shareholdings were mainly in a small number of older mines on the Witwatersrand, but as a result of the changes to which I have referred, the relative importance of those holdings is steadily declining and each year a greater proportion of dividend income is derived from holdings in the newer mines.

As I have indicated on former occasions, investments acquired in recent years included large direct and indirect interests in Free State Geduld Mines Limited and, therefore, the progress of this mine will be of considerable importance to the Corporation. For the year ended September 30, 1959, with a net profit of £5,699,920, it declared dividends totalling 8/- per share, and in its annual report and accompanying chairman's review for that year, references to future mining policy and prospects gave promise of a steady increase in tonnage milled and recovery grade. The interim dividend declared in March, 1960, was maintained at the 1959 rate of 3/6 per share, declared profits for the half-year having amounted to £3,838,961.

It will be recalled that in 1956, in terms of an agreement between General Exploration Orange Free State Limited and a number of other companies, Riebeek Gold Mining Company Limited was formed under the administration of Anglo-Transvaal Consolidated Investment Company Limited to exploit certain mineral rights in the van den Heeverstuk area of the Orange Free State. Later the Riebeek Company was amalgamated with Loraine Gold Mines Limited, and the Corporation then became a large shareholder in Loraine by reason of its extensive holdings in the Riebeek Company. It has since exercised its rights to subscribe for additional shares in an increase of capital to raise funds for the development of the Riebeek portion of the combined mining area. Loraine has made rapid progress in the sinking of its No. 3 shaft in the Riebeek area to final depth, and on the 9th of this month a holing through was effected between this shaft and the twin haulage from the original Loraine lease area. Development operations on an extensive scale on the Elsburg Reef horizons, on which the future of Loraine largely depends, will commence as soon as possible. Such limited exposures as have already been made on those horizons have been most encouraging.

The other mining companies, both within and outside the group, in which the Corporation is interested, are continuing to make satisfactory progress, and it is particularly pleasing to be able to refer to the reef intersection of 713 inch-dwt in the Toni shaft at Stilfontein Gold Mining Company Limited which was announced recently.

The Corporation continues actively to investigate the mineral potential of large areas of ground and no opportunity is lost in considering new mining business which may be of interest to the Corporation. In some of the areas under option, particularly in the Orange Free State, drilling results have unfortunately proved negative, but investigations are continuing on the remainder.

Although the Corporation has holdings in a number of industrial enterprises, the total value of these investments is relatively small, as is the income derived therefrom. Last year most of those companies experienced ex-

tremely competitive conditions and, with one or two exceptions, profits declined. The outlook for the future for most of them has been affected by uncertainties to be found in all sections of the country's economy.

For the Union the economic feature for 1959 was the very welcome change for the better in its financial relations with the rest of the world. The lower level of imports established in the second half of 1958 as a result of the monetary and fiscal measures then imposed by the authorities continued throughout last year. In addition, exports increased and, with the higher gold output there was an improvement of £147,000,000 in the balance of payments on current account, which changed from an adverse balance of £74,000,000 in 1958 to a favourable balance of £73,000,000 last year. Therefore, notwithstanding a net outward flow of funds on capital account of £33,000,000, the gold and foreign exchange reserves increased on balance by £40,000,000. With the improvement in the balance of payments, funds were freely in supply and, in keeping with the trend overseas, there was a decline in short-term interest rates. Throughout the year there was a sustained demand for investments, and the upward trend in Stock Exchange turnover was accelerated, with an accompanying rise in the indices of share prices, notably those of producing gold mines. There was also evidence of a further increase in the domestic ownership of South African shares, particularly by insurance companies, pension funds and other financial institutions which, coupled with American buying, helped to absorb the quite substantial disinvestment by United Kingdom and Continental holders of shares.

However, the buoyant Stock Exchange conditions, which had already shown some signs of levelling off towards the end of the year, were disturbed in the opening months of 1960 and the market values of South African securities have now depreciated to levels considerably lower than those obtaining at the close of last year.

You will have noted from the Directors' Report that the aggregate value of the Corporation's portfolio of quoted investments as at April 29, 1960, had fallen materially to £21,804,000. At the end of last week the value of the portfolio was down by at least a further £2,000,000.

The gold mining industry has never in its history produced more gold than it does at the present time, yet in spite of this we have received a severe financial setback. The reason must, therefore, be looked for outside the industry itself. Early this year criticism overseas of South Africa's racial policies became more widespread and it became plain that adverse economic consequences might flow therefrom. The momentous changes elsewhere in Africa and the irresistible progress of world opinion on racial problems have concentrated the attention and the criticism of many countries on what they regard as South Africa's unrealistic attitude towards its non-Europeans. It is, therefore, natural that in spite of the great economic potential of the Union, investors under these circumstances should begin to feel nervous of our future. The demonstrations and disturbances in the main centres of the Union during March and April were followed by measures to restore order, including the proclamation of a state of emergency and the deten-

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tion of a large number of persons. These measures inevitably caused a further loss of confidence, and this has been aggravated by the fact that the declaration of the state of emergency has not been repealed.

The decline in market values shows how sensitive overseas opinions and the investors of international capital are to the general background in South Africa. The alarming fall in these values is a measure of present fears, both overseas and here, that adverse economic consequences will follow if present policies and projected constitutional changes in the Union are pursued. A continuing flow of capital to this country is essential if its future development is to follow the pattern set over many years past and it is, therefore, vital that there should be a greater effort on the part of South African citizens to restore an atmosphere of stability and confidence for both the short term and the long term outlook.

There are wide differences of opinion as to how stability and confidence can be restored, but one thing is quite certain and that is there is no room in South Africa for extremist views. A modified course of action must be found which will not be unfair to the European population and will at the same time go some way to meet as rapidly as possible, the urgent economic requirements and thereafter, in gradual stages, the cultural aspirations of the non-Europeans.

The European section of the population must now seriously reconsider its concepts of race relations, not only on the basis of ideological theories, but also in the sober light of the probable economic consequences of such theories and of the realities of the pressure of world opinion from which South Africa now can no longer insulate itself. Failure to face up to this problem now with the sincere intention of formulating a new approach designed to meet the urgent material needs of the non-European population and to alleviate, wherever possible, the other disabilities under which they live, particularly in the urban areas, may well have disastrous consequences in the long run.

My Corporation is impressed by the numerous approaches that have been made to the Government by various organized bodies representing large employers of both European and non-European labour in the Union. Despite the view that has recently been expressed that the leaders of industry should leave politics to the politicians, when the policies of those politicians threaten the basic economy of the country, then I believe the leaders of industry have not only a right but also a duty to express their opinion and to continue to do so until some change of policy is apparent. Until there is positive response, we cannot even begin to return to internal solidarity and progress and to a restoration of external confidence. This, surely, is the opportunity for the Government to display a high degree of statesmanship which the nation is entitled to expect from those to whom the responsibility of leadership has been entrusted. In the words of a senior member of the Cabinet, South Africa desperately needs a NEW SPIRIT, and I would now close expressing my own view that this NEW SPIRIT is imperative and a matter of extreme urgency. Those responsible for governing the country must do what is necessary to make this possible.

GENERAL EXPLORATION ORANGE FREE STATE LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S SPEECH

The following is Sir George Albu's review covering the operations of the General Exploration Orange Free State Limited, during the year ended December 31, 1959:

This is the Fourteenth Annual General Meeting of your Company and I submit for your approval and adoption the Directors' Report and Accounts for the year ended December 31, 1959, which have been in your hands for some time.

A study of the Balance Sheet now before you will reveal that net Current Assets have diminished during the year by about £75,000 and now stand at approximately £740,000 compared with £815,000 at the end of the previous year. This was due principally to additional shares taken up early in 1959 in Loraine Gold Mines Limited flowing from the exercise of rights then offered by that Company, as a result of which the book value of investments was increased by £81,127 after writing off £1,800 as indicated in the Directors' Report.

The credit balance carried forward on Income and Expenditure Account increased during the year to £16,858 as disclosed in detail in that Account.

During the year the Company

incurred expenditure on drilling and prospecting amounting to £10,094. This represented the Company's share in respect of its 25 per cent. participation with General Mining and Finance Corporation Limited in the investigation of areas approximating 75,000 morgen in the Orange Free State. I regret having now to advise stockholders that the drilling activities in these areas have proved to be negative.

I am sorry to have to report that in the early months of this year the unsettled state of affairs in this country brought about a marked and serious depreciation in the market value of the Company's investments which, at December 31 last year, stood at £833,195, but which had fallen to £561,070 as at the 14th of this month, reflecting a drop in value of approximately 33 per cent.

By April this year the 26 ft. diameter No. 3 shaft on Loraine Gold Mines Limited reached its planned final depth of 5,851 feet and on the 9th of this month a bolting through was effected between this shaft and the 52nd haulage, some six months earlier than originally anticipated. As stockholders are aware, Loraine Gold Mines Limited falls under

the administration of Anglo-Transvaal Consolidated Investment Company Limited, and all concerned are to be congratulated on these outstanding achievements and particularly the speed at which they have been accomplished. It will now be possible, with the improved ventilation and haulage facilities, to commence full scale development on the Elsburg series of the Upper Reefs in this area, from which it is anticipated stoping will have commenced by the year end. As indicated in the Directors' Report the results obtained from the limited amount of development that has taken place on these Elsburg Reefs during last year have been very encouraging and of the 2,345 feet sampled on these reefs during the first quarter of this year 1,410 feet or 60.1 per cent. was found payable with a channel width of 39.5 inches giving 469 inch dwt of gold and 21.40 inch lb. of uranium oxide.

Stockholders have been informed from time to time of the rights that flow to this Company in the event of a satisfactory mine being found to exist on the Upper Reefs on the former Riebeck Lease Area, and without further detailed repetition I would like to remind stockholders that if a satisfactory mine is established the rights to deal with the Lower Reefs would then devolve upon your Company and its participants. At this stage, however, notwithstanding the fact that the limited development results can be said to be most encouraging, it is too early to attempt to forecast on this subject.

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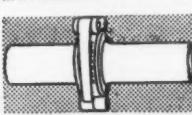
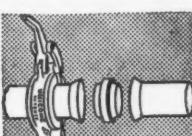
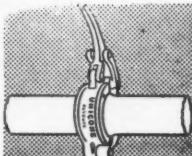
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INCREASED GROUP PROFIT

The Twenty-third Annual Ordinary General Meeting of Sir Lindsay Parkinson & Co. Ltd., will be held on July 20 in London.

The following is an extract from the circulated statement of **Mr. A. E. Parkinson**, Chairman:

The Group Profit for 1959 amounts to £308,146 before Taxation, against £270,500 for 1958. Taxation requires £159,905 against £134,997 for 1958. The Group Profit and Loss Account Balance carried forward is £475,557 at December 31, 1959, against £398,375 at 1958. The surplus of Current Assets over Current Liabilities and Provisions on the Consolidated Balance Sheet amounts to £255,548 against £33,300 at 1958.

Members will recollect that for 1958 dividends on the Ordinary Stock were declared to a total of 15% (less tax) and at the time of declaration of the final dividend for 1958 a special interim dividend of 6% (less tax) was declared for 1959 which was not to be taken into account when deciding the further distributions to be made or recommended for 1959.

Your Board recommends a final dividend of 21½% (less tax) making a total distribution of 24% (less tax) for the year (ignoring the special interim dividend of 6% (less tax) declared at the time of the last Annual General Meeting).

Rights Issue

The Company's Ordinary Stock has now been transferable since June 13, 1960, in multiples of 5/- instead of £1.

As members are aware the Directors are proposing that the Company should raise further permanent capital by an issue at par of 1,200,000 Ordinary Shares of 5/- each on the basis of one new share for every 5/- of Ordinary Stock held. Your Directors have been mindful, not only of the desirability of raising further permanent capital needed to finance the continuing growth of the business, but also of the fact that, in their view, it would be appropriate to bring the issued share capital of the Company more in line with the capital actually employed. The present Ordinary Capital is £300,000 and Group Reserves are £911,079. After the proposed issue the issued Ordinary Capital will be £600,000 and the Reserves will remain at £911,079.

A resolution to increase the Company's authorized ordinary capital by a further 1,800,000 Ordinary Shares of 5/- each and to convert such shares into Stock on issue and a Resolution to alter the Articles with regard to the voting rights attaching to ordinary capital will be put at the forthcoming Annual General Meeting. The Board has no present intention of issuing any ordinary capital not required for the proposed Rights Issue.

The value of the work in hand of our Group at present amounts to over £20,000,000, and although tendering conditions at the moment are extremely competitive, especially for Roadworks in the U.K., your Board looks forward with confidence to the future.

Book Reviews

Economic Survey of Minerals in India,
by A. K. Madan, P. 228, Economic
and Industrial Publications, New
Delhi, Rs. 16.00 35s., \$5.00.

The object of this publication is to review India's mineral resources and the problems connected with the disposal and utilization of important minerals. The author, a well-known chemical engineer and industrial economist, has sought to throw light on the past growth of the industry and the scope for its future development.

The development of India's mineral resources has been hampered by such factors as limited domestic markets, fluctuations in world demand, and problems of transportation. In recent years the share of minerals in the total national product has been roughly of the order of one per cent. At the present time, however, prospects for stepping up mineral production, both for export and for internal consumption, have been significantly improved as a result of India's far-reaching programme of economic development, in which the exploitation of mineral resources has the dual function of supplying the basic materials for industrial development and earning foreign exchange to assist in meeting the heavy import bill.

In recent years both the Central and State Governments have shown keen interest in developing the country's mineral resources. Departments of mining and geology have been strengthened and important mining development projects have been sponsored. The greatly increased emphasis on exploration has resulted in major discoveries and has given encouraging indications of the country's mineral potential.

The publication here reviewed is an original contribution to the literature on minerals and mining in India. It sets out to assess mineral resources in relation to existing needs and the requirements of the Five Year Plans. A section dealing with the growth of the mining industry in general is followed by a survey of minerals and mineral products. A third section is devoted to the problems of the mining industry. There is also a useful appendix of statistical tables whereby India's mineral production can be compared with that of selected countries.

This timely reference work gives a concise and valuable summary of India's presently known mineral resources and of the problems involved in their more intensive exploitation. The conclusion is reached that in the existing circumstances the mining industry could flourish through the joint effort of the private and the public sectors, but that perhaps the working of the private sector under the supervision and guidance of the government might prove an ideal arrangement for the time being.

This year South Africa celebrates its fiftieth year of Union and in a special presidential message, Mr. W. J. Busschau, president of the Transvaal and O.F.S. Chamber of Mines, reviews the achievements of South Africa's mining industry in this special issue of *Mining Survey*, i.e. Vol. II, No. 1, published by the Transvaal and O.F.S. Chamber of Mines.

Contributions to the Data on Theoretical Metallurgy, XII is a revision and extension of Bulletin 476 and includes data available to September 1958. In the intervening 10-year period the quantity of high-temperature thermal data has increased markedly, so that the present bulletin covers about twice as many substances as the 1949 compilation. All these publications are from the U.S. Bureau of Mines.

This publication, as its title indicates, contains high-temperature heat-content, heat-capacity, and entropy data for the elements and inorganic compounds. The available experimental and calculated values were compiled and intercompared, and a selection of "best" values was made. The heat-content data are given in tabular form for use by those who make thermodynamic computations by means of tables, and in algebraic form for use by those who prefer equations. The Bureau hopes that this dual presentation of the data will make the information useful to many categories of industrial scientists and engineers and to teachers of metallurgical and chemical thermodynamics.

Information on the characteristics, location, and ownership of California manganese deposits is given in a new U.S. Bureau of Mines publication. According to the report, most of California's manganese ore has come from lenticular oxide deposits in the Coast Range of the northern and central parts of the State. Remaining reserves, however, are mostly in deposits of the southeast, which must be upgraded if they are to meet market specifications.

Report of Investigations 5579, Reconnaissance of California Manganese Deposits, can be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., for 35 c. It is not sold by the Bureau of Mines.

South Central United States, is a net exporter of refractories, about 88 per cent of refractories production being concentrated in Missouri, and refractories industry is economically important nationally.

Sources of Refractory Raw Materials and Refractories Markets in South Central U.S., describes how the refractories needs of the Central U.S. are met and how refractories producers in the area meet requirements of consumers outside the area.

In 1958, Canada was the world's fifth largest copper producer with mines in eight provinces and the Northwest Territories. Ores and concentrates are treated in six smelters and the resulting blister copper and anodes are refined in two electrolytic refineries. Domestic consumption accounted for about 30 per cent of Canada's production of refined copper, the remainder being exported to the U.S. and Europe.

Survey of the Copper Industry in Canada, 1958, provides detailed information on the sources of primary production, trade and consumption of copper in Canada in 1958.

Metal and Mineral Trades

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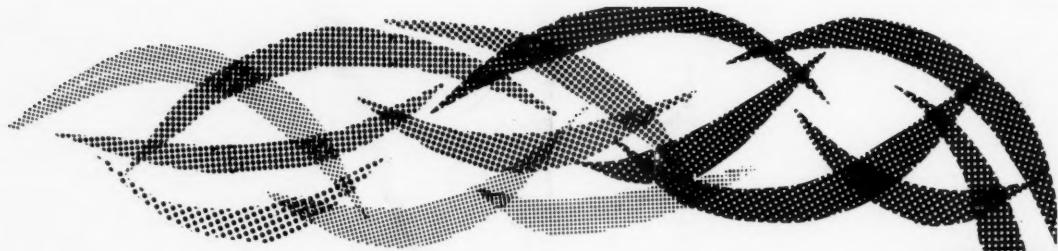
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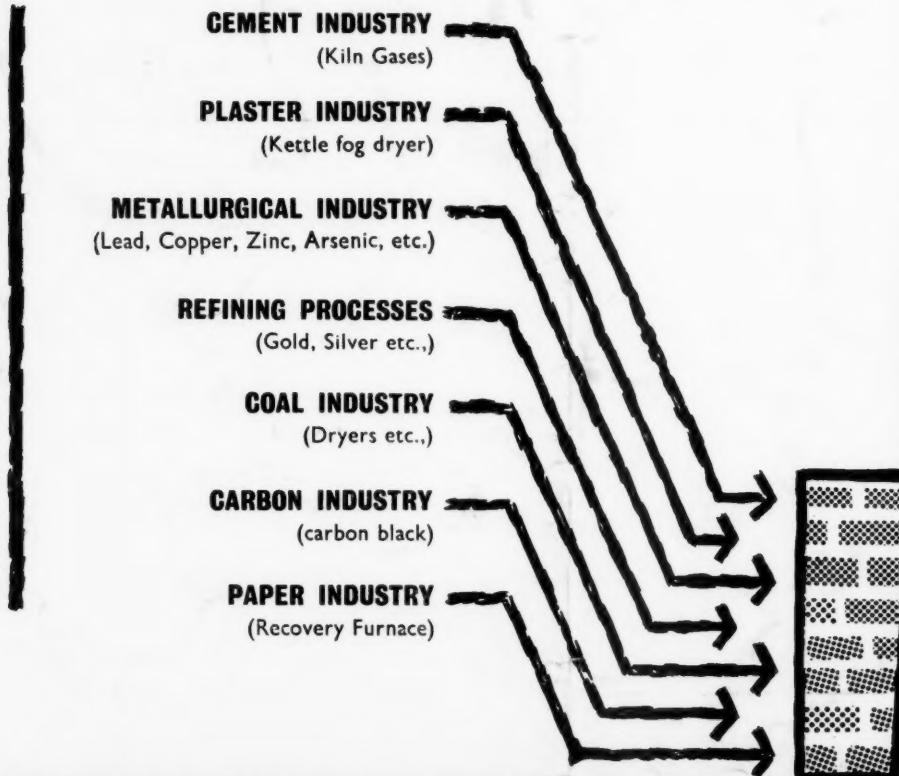
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